

Figure 1a

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(SEQ ID 147)**Figure 1b**

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(SEQ ID 148)

Figure 2a

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PESS*

(SEQ ID 149)**Figure 2b**

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(SEQ ID 150)

Figure 3

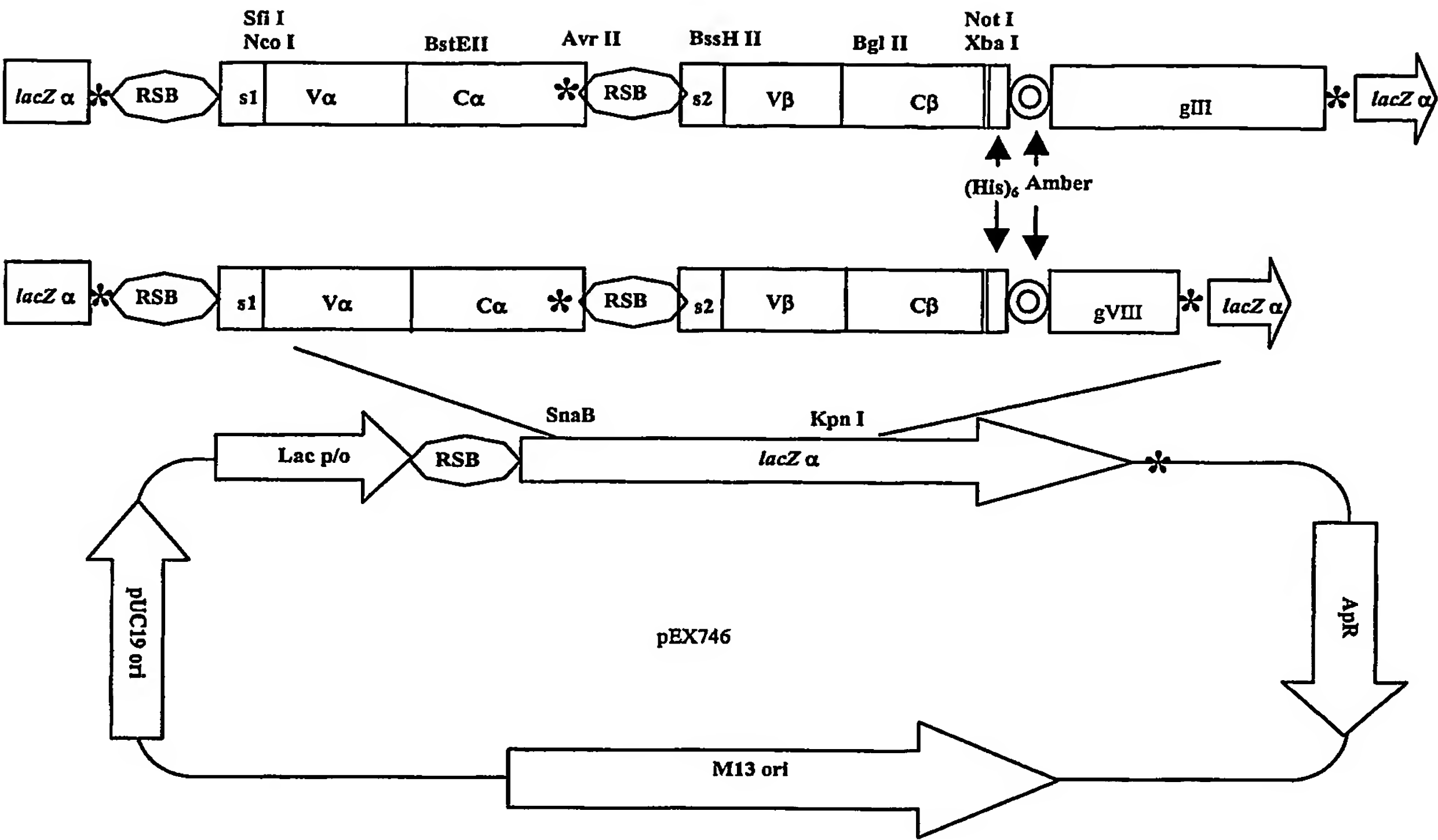


Figure 4

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(SEQ ID 151)

Figure 5

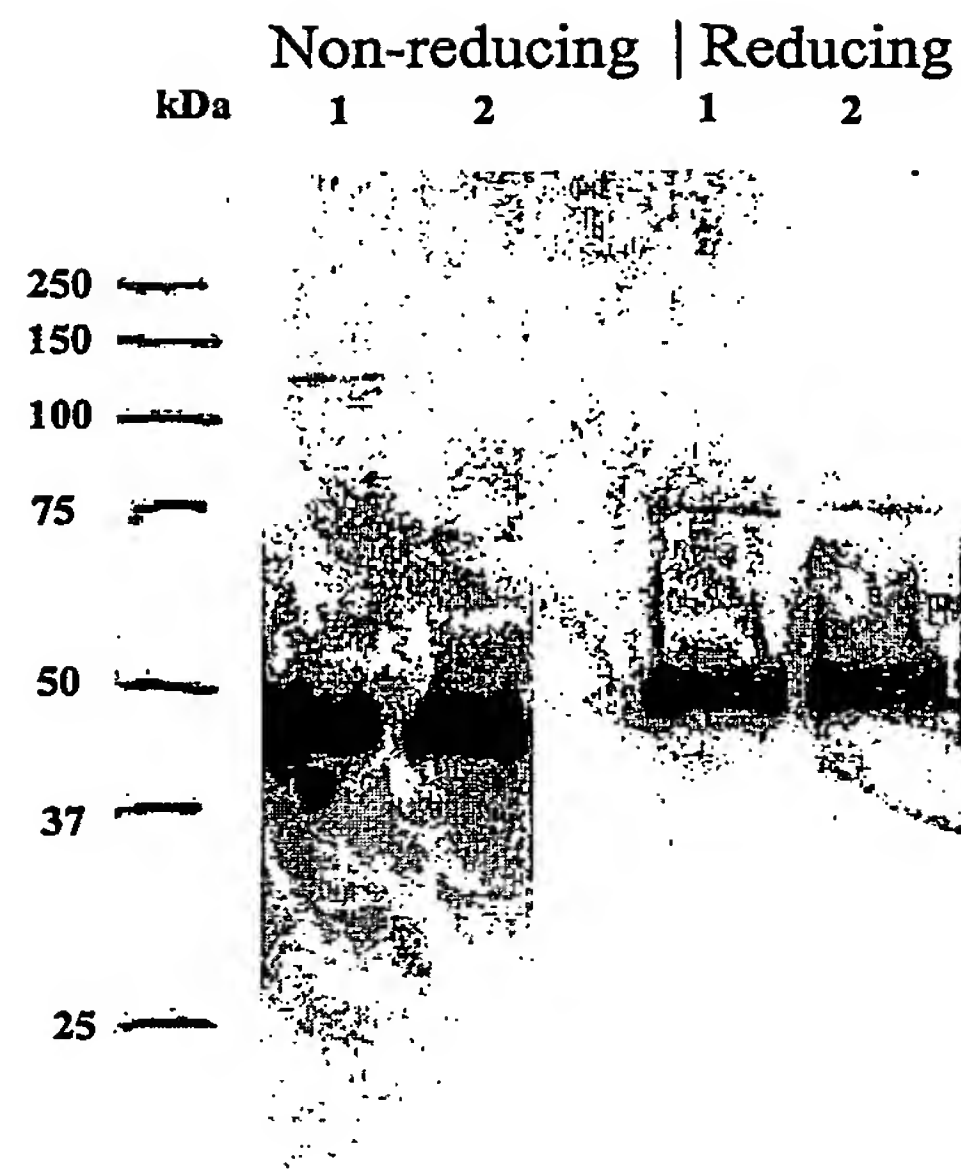


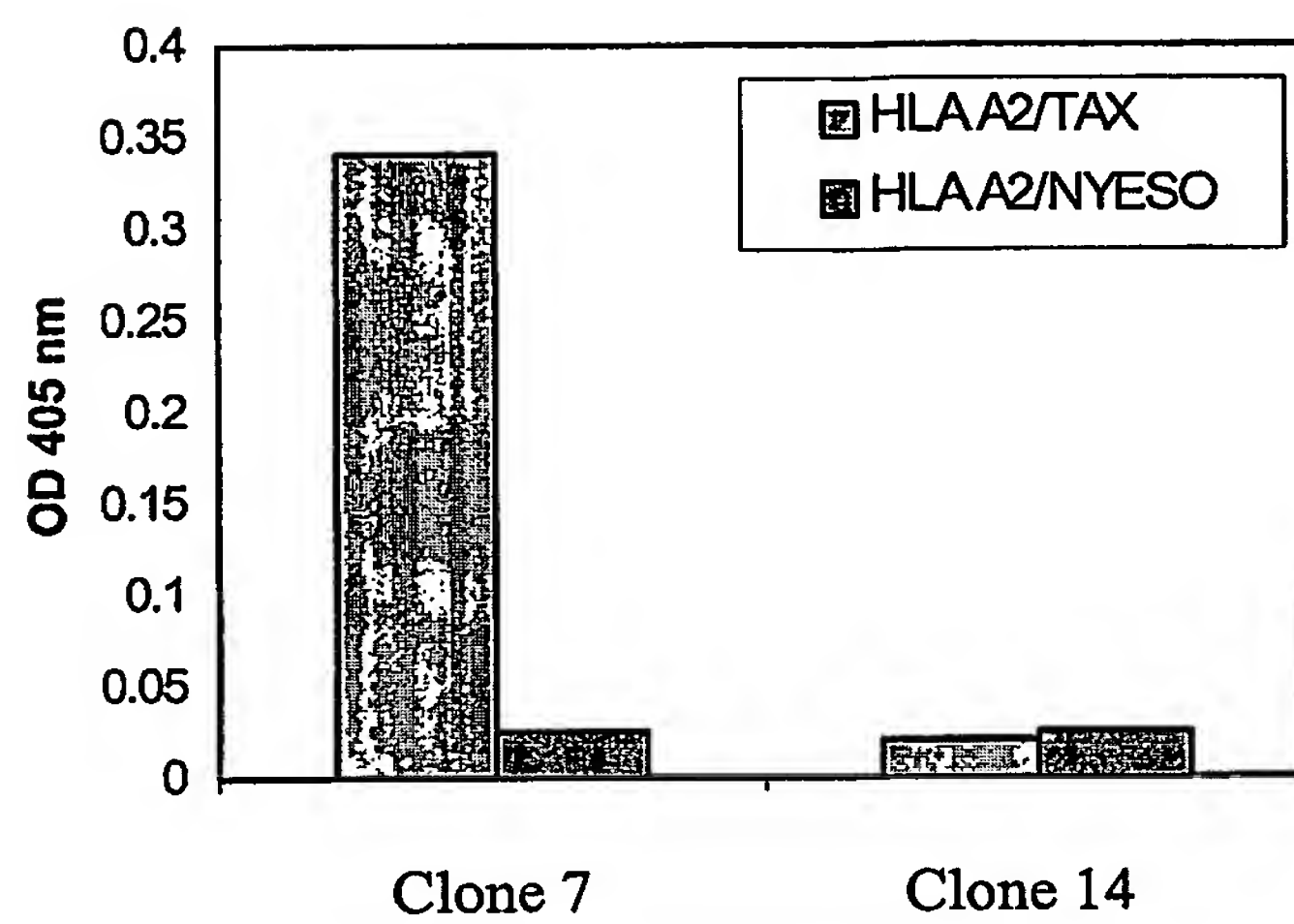
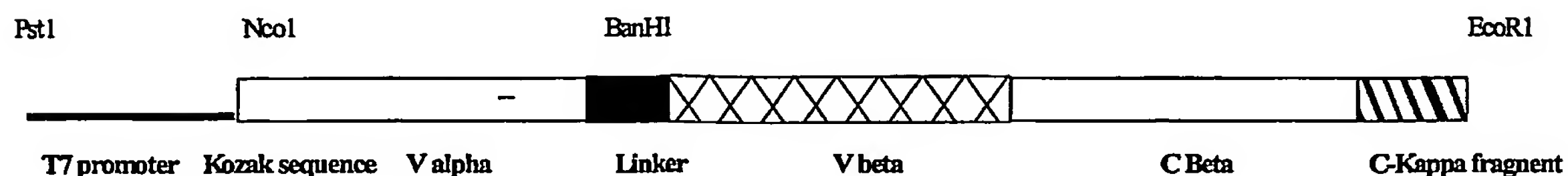
Figure 6

Figure 7a

Schematic diagram of the A6 scTCR-C-Kappa ribosome display construct

**Figure 7b**

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(SEQ ID 152)

Figure 7C

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(SEQ ID: 153)

Figure 8

pUC19-T7 sequence

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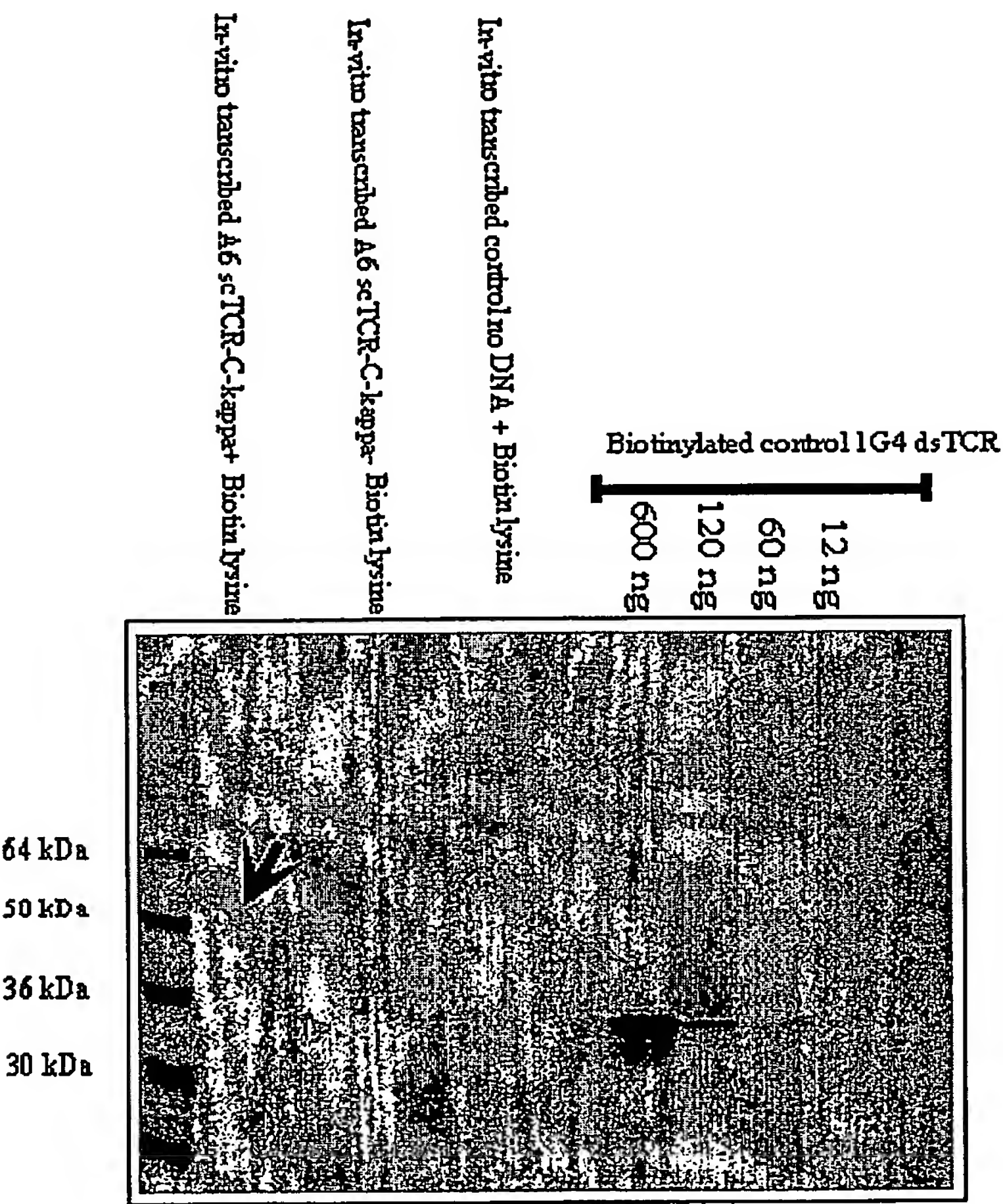
Figure 9

A6 scTCR-C-kappa cloned into pUC19-T7

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151 tgtccatata ctccaatggt gacaaagaag atggaagggt tacagcacag
201 ctcaataaag ccagccagta tgtttctctg ctcatcagag actcccagcc
251 cagtgattca gccacctacc tctgtgccgt tacaactgac agctggggga
301 aattgcagtt tggagcaggg acccagggtt tggtcaccgg tggaggcggg
351 tcaggcggag gtggatccgg cgggtggcggg tcgaacgctg gtgtcactca
401 gaccccaaaa ttccagggtc tgaagacagg acagagcatg acactgcagt
451 gtgccagga tatgaacct gaatacatgt cctggtatcg acaagacca
501 ggcatggggc tgaggctgat tcattactca gttggtgctg gtatcactga
551 ccaaggagaa gtccccaatg gctacaatgt ctccagatca accacagagg
601 atttcccgtc caggctgctg tcggctgctc cctcccagac atctgtgtac
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701 cgggcccggg accaggctca cggtcacaga ggacctgaaa aacgtgttcc
751 caccgaggt cgctgtgttt gagccatcag aagcagagat ctcccacacc
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(SEQ ID 155)

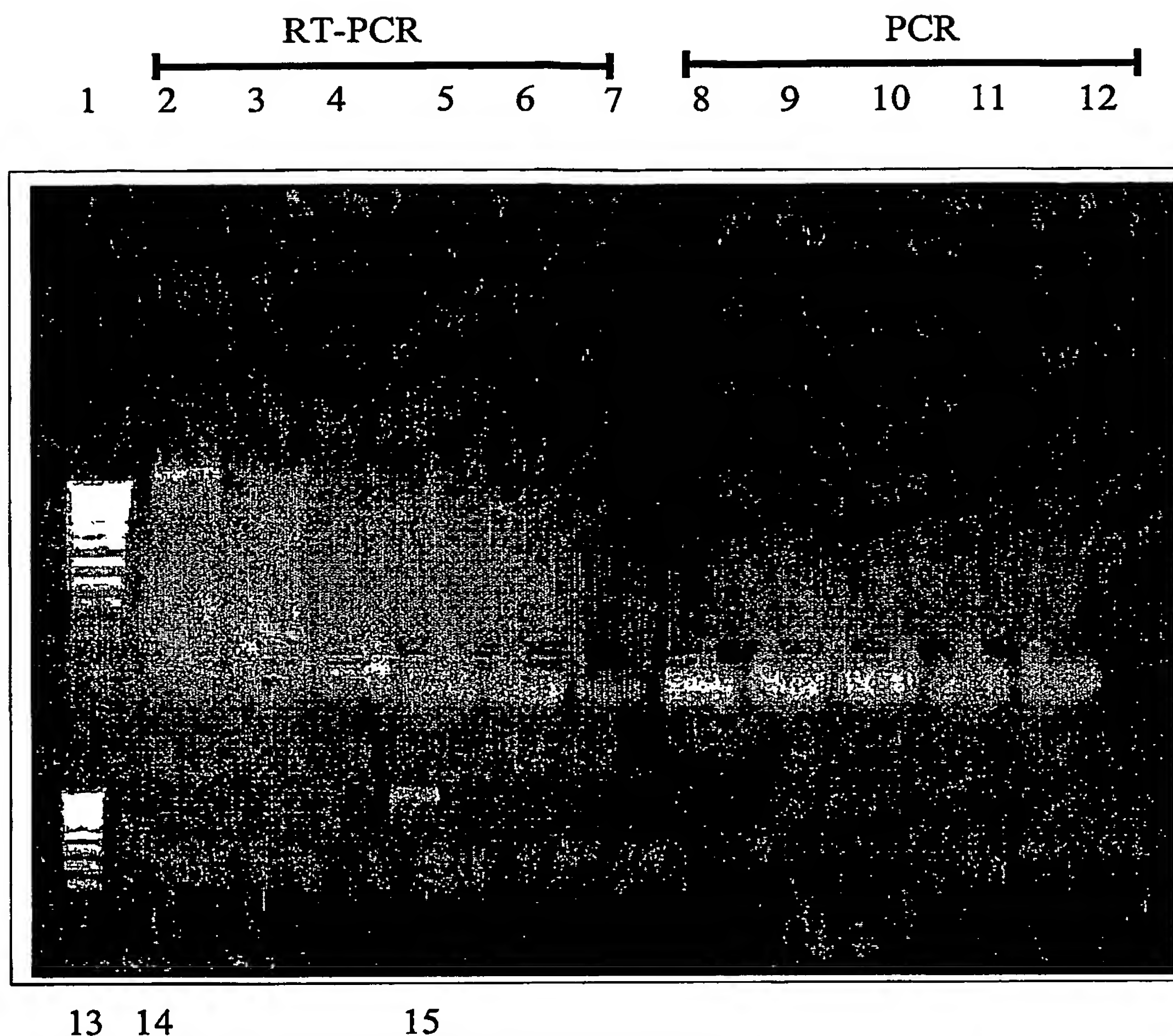
Figure 10



The A6 scTCR-C-Kappa protein is shown in the above western blot with an arrow.

BEST AVAILABLE COPY

Figure 11



Lane 1 Bioline 100bp DNA marker

Lane 2 A6scTCR-C-Kappa reaction selected against HLA-A2 TAX beads

Lane 3 A6scTCR-C-Kappa reaction selected against HLA-A2 TAX beads in the presence of 10 microgrammes of soluble A6scTCR

Lane 4 A6scTCR-C-Kappa reaction selected against control beads

Lane 5 Control no DNA reaction selected against HLA-A2-TAX beads

Lane 6 Control no DNA reaction selected against HLA-A2 TAX beads in the presence of 10 microgrammes of soluble A6scTCR

Lane 7 Control no DNA reaction selected against control beads

Lanes 8-12 and lane 13 are as lanes 2-7 except no reverse transcriptase was added just Roche high fidelity taq. These are the DNA contamination controls.

Lane 13 RT-PCR positive control.

Figure 12a

Clone 9 Mutated A6 TCR β chain DNA sequence

```
gctggtgtcactcagaccccaaaattccaggtcctgaagacaggacagagcatgacactgcagtgtgccaggatatgaaccat
gaatacatgtcctggtatcgacaagacccagggcatggggctgaggctgattcattactcagttggtgctggtatcactgaccaagga
gaagtcccaatggctacaatgtctccagatcaaccacagaggatttcccgtcaggctgctgtcggctgctccctcccagacatct
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agaggacctgaaaaacgtgttcccacccgaggtcgctgtgtttgagccatcagaagcagagatctcccacacccaaaaggcca
cactgggtgtgctggccacaggcttctaccccgaccacgtggagctgagctgggtgggtgaatgggaaggaggtgcacagtgggg
tctgcacagacccgcagccccctcaaggagcagcccgccctcaatgactccagatacgctctgagcagccgcctgagggctcgg
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tagggccaaacccgtcacccagatcgtcagcgccgaggcctggggtagagcagac
```

(SEQ ID 156)

Figure 12b

Clone 9 Mutated A6 TCR β chain amino acid sequence

```
AGVTQTPKFQVLKTGQSMTLQCAQDMNHEYMSWYRQDPGMGLRLIHYSVGAGITDQGEVP
NGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASRPGLAGGXPEQYFGPGTRLTVTEDLKNVF
PPEVAVFEPSEAEISHTQKATLVCLATGFYPDHVELSWWVNGKEVHSGVCTDPQPLKEQPA
LNSRYALSSRLRVSATFWQDPRNHFRCQVQFYGLSENDEWTQDRAKPVTQIVSAEAWGR
AD
```

(SEQ ID 157)

X - Denotes the position of the amino acid corresponding to the introduced 'opal' stop codon, this will generally result in the substitution of a tryptophan (w) residue into the TCR β chain at this point.

Figure 13**Clone 49 Mutated A6 TCR β chain DNA sequence**

gctgggtgactcagacccccaaaattccaggtcctgaagacaggacagagcatgacactgtagtgtgccaggatatgaaccat
gaatacatgtcctggtatcgacaagacccagggcatggggctgaggctgattcattactcagttggctggtatcactgaccaagga
gaagtcccaatggctacaatgtctccagatcaaccacagaggatttccgctcaggctgctgtcggctgctccctccagacatct
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cactgggtgtcctggccacaggcttctaccccgaccacgtggagctgagctgggtgggtgaatgggaaggaggtgcacagtgggg
tctgcacagacccgcagccccctcaaggagcagcccgccctcaatgactccagatacgctctgagcagccgcctgagggtctcgg
ccaccttctggcaggacccccgcaaccacttccgctgtcaagtccagttctacgggctctcggagaatgacgagtggaccagga
tagggccaaacccgtcaccagatcgtcagcgccgaggcctggggtagagcagac

(SEQ ID 158)

Figure 14a

Clone 134 Mutated A6 TCR β chain DNA sequence

gctgggtgtcactcagacccccaaaattccaggtcctgaagacaggacagagcatgacactgcagtgtgccaggatatgaaccat
gaatacatgtcctgggtatcgacaagacccagggcatggggctgaggctgattcattactcagttgggtgctgggtatcactgaccaagga
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tagggccaaacccgtcaccagatcgtcagcgccgaggcctggggtagagcagactaagcttgaattc
(SEQ ID 159)

Figure 14b

Clone 134A Mutated A6 TCR β chain amino acid sequence (BIAcore)

MNAGVTQTPKFQVLKTGQSMTLQCAQDMNHEYMSWYRQDPGMGLRLIHYSVGAGITDQG
EVPNGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASRPGLMSAEPEQYFGPGTRLTVTEDLK
NVFPPEVAVFEPSEAEISHTQKATLVCLATGFYPDHVELSWVNGKEVHSGVCTDPQPLKE
QPALNDSRYALSSRLRVSATFWQDPRNHFRCQVQFYGLSENDEWTQDRAKPVTQIVSAEA
WGRAD*
(SEQ ID 160)

Figure 14c

Clone 134 Mutated A6 TCR β chain amino acid sequence (ELISA)

AGVTQTPKFQVLKTGQSMTLQCAQDMNHEYMSWYRQDPGMGLRLIHYSVGAGITDQGEVP
NGYNVSRSTTEDFPLRLLSAAPSQTSVYFCASRPGLMSAQPEQYFGPGTRLTVTEDLKNVF
PPEVAVFEPSEAEISHTQKATLVCLATGFYPDHVELSWVNGKEVHSGVCTDPQPLKEQPA
LNDSRYALSSRLRVSATFWQDPRNHFRCQVQFYGLSENDEWTQDRAKPVTQIVSAEAWGR
AD
(SEQ ID 161)

Figure 15

A6 TCR clone 134

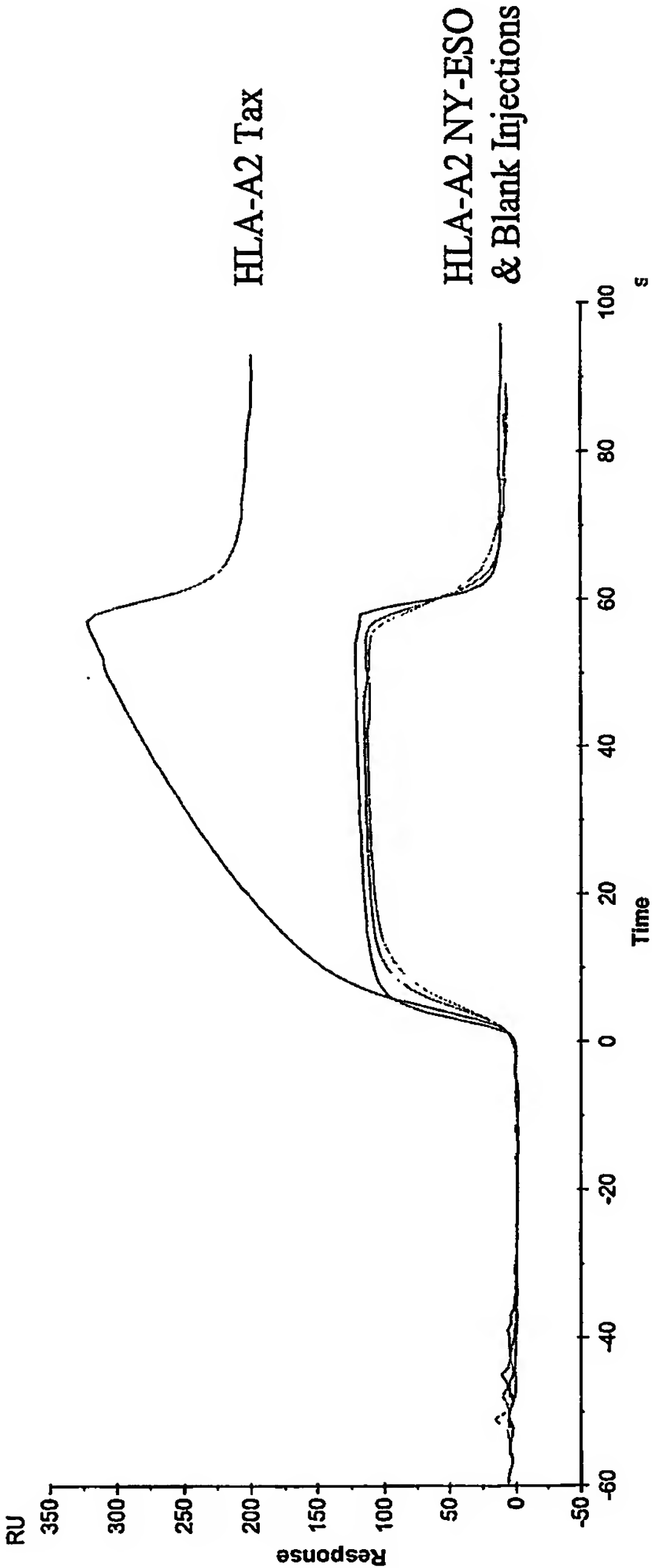
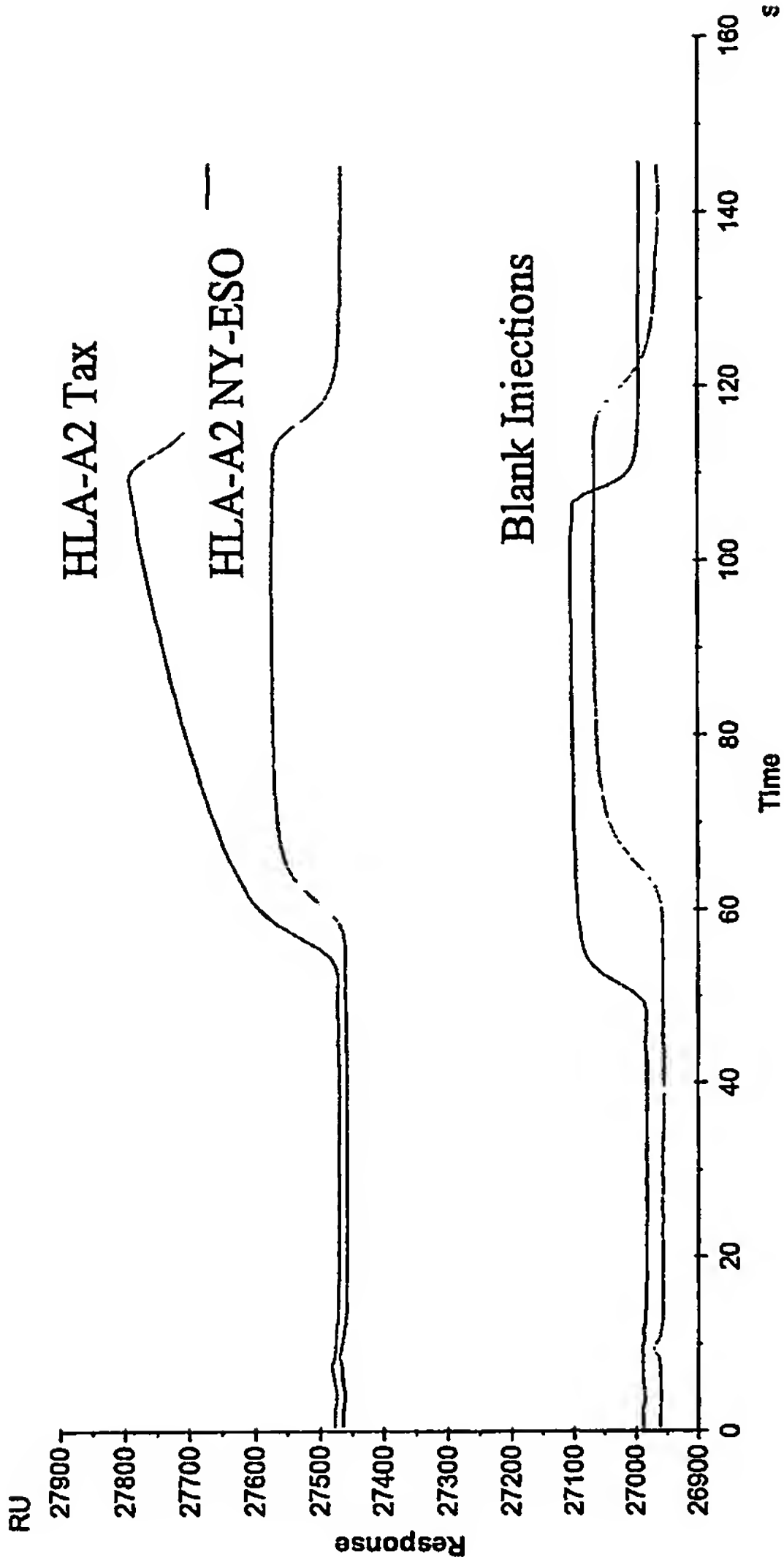


Figure 16

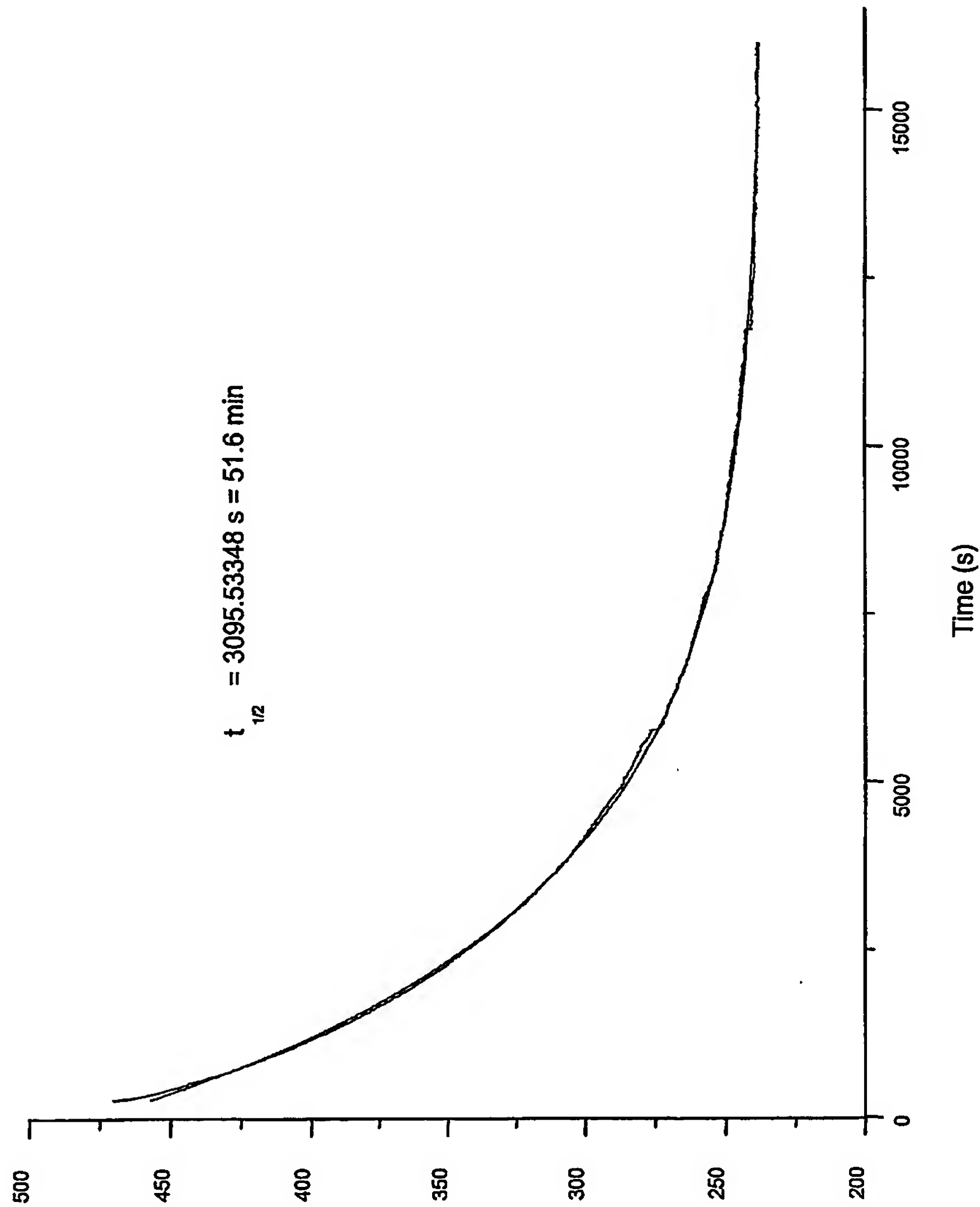


Figure 17a

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(SEQ ID 162)

Figure 17b

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actaa
(SEQ ID 163)

Figure 18a

MQEV TQIP AALS VP EGEN LV LN CS FT DS AI YN LQ WFR Q
DP GK GL TS LL IQ SS QR EQ TS GR LN AS LD KS SG RST LY I
AA SQ PG DS AT YL CA VR PT SG GS YI PT FG RG TS LI VH PY I
QN PD PA VY QL RD SK SS DK SV CL FT DF DS QT NV SQ SK DS
DV YI TD KC VL DM RS MD FK SN SA VA WS NK SD FA CA NA F
NN SI IP ED TF FP SP ES S Stop
(SEQ ID 164)

Figure 18b

MGVT QTPK FQ VL KT GQ SM TL QCA QDM NHE YMS WYR Q
DP GM GL RL IH YS VG AG ITD QGE VP NG YN VS RS ST TED FP
LR LL SA APS QTS VY FC ASS YVG NTG EL FF GE GS RL TV LE
DL KN VF PP EV AV FE PSE AE IS HT QK AT LV CL AT GF YP DH
VE LS WW VNG KE VH SG VCT DP QPL KE QP AL ND SRY ALS
SR LR VS AT FW QD PR NH FR CQ VQ FY GL SE ND EW TQ DRA
KP VT QI VS AE AW GR AD Stop (SEQ ID 165)

Figure 19a

```

TTCCTGGCCT TTTGCTGGCC TTTTGCTCAC ATGTAATGTG AGTTAGCTCA
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CTCATTAGGC ACCCCAGGCT TTACACTTTA TGCTTCCGGC TCGTATGTTG
GAGTAATCCG TGGGGTCCGA AATGTGAAAT ACGAAGGCCG AGCATACAAC
TGTGGAATTG TGAGCGGATA ACAATTTTAC ACAGGAAACA GCTATGACCA
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TGATTACGCC AAGCTACGTA CTTAAGTATT CTATTTCAAG GAGACAGTCA
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TGTAAGAGACA ACGAATAAGT CAGTTCAGTC TCTCTCGTTT GTTCACCTTC
ACTTAATGCC TCGCTGGATA AATCATCAGG ACGTAGTACT TTATACATTG
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GTCGAAGAGT CGGACCACTG AGTCGGTGGA TGGAGACACG ACACTCCGGG
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TACACACGAT CTGTACTCCA GATACCTGAA GTTCTCGTTG TCACGACACC
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CGGCTCCGGA CCCATCTCG TCTGCGCCG CGT

```

(SEQ ID 166)

Figure 19b

K Y L L P T A A A G L L L L A A Q P
A M A K Q E V T Q I P A A L S V P E
G E N L V L N C S F T D T S L I N L
Q W F R Q D P G R L T S L L L D K S
S S Q R S T L Y I A S Q S A G D S A T
Y L C S A V R P T S G I Q P I P T F G
R G T S L I V H S P Y I Q N P D P A V
Y Q L R D S K S D K S V C D L F T D
F D S Q T N V S Q S M D F S D V Y I T
D K C V L D M R S A C A N A S N A V
A W S N K S D F P S C E S M K K L L
I P E D T F V V P F Y S H S A Q A G
F A I P L V Q V L K T G Q S M T L Q
T Q T P K F N H E Y S V G A T I Q D P
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M G L R L I H Y S V G A T I Q D P
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R L L S A A P S Q T S V T E C F A P S
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F Y P D H V Q L S P L W V N G L A T
S G V C T D P Q P L R K V E Q P F E
S R Y A L S S C Q V R Q F S T W E
P R N H F R C Q V Q V T Y A T S A
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(SEQ ID 167)

Figure 20

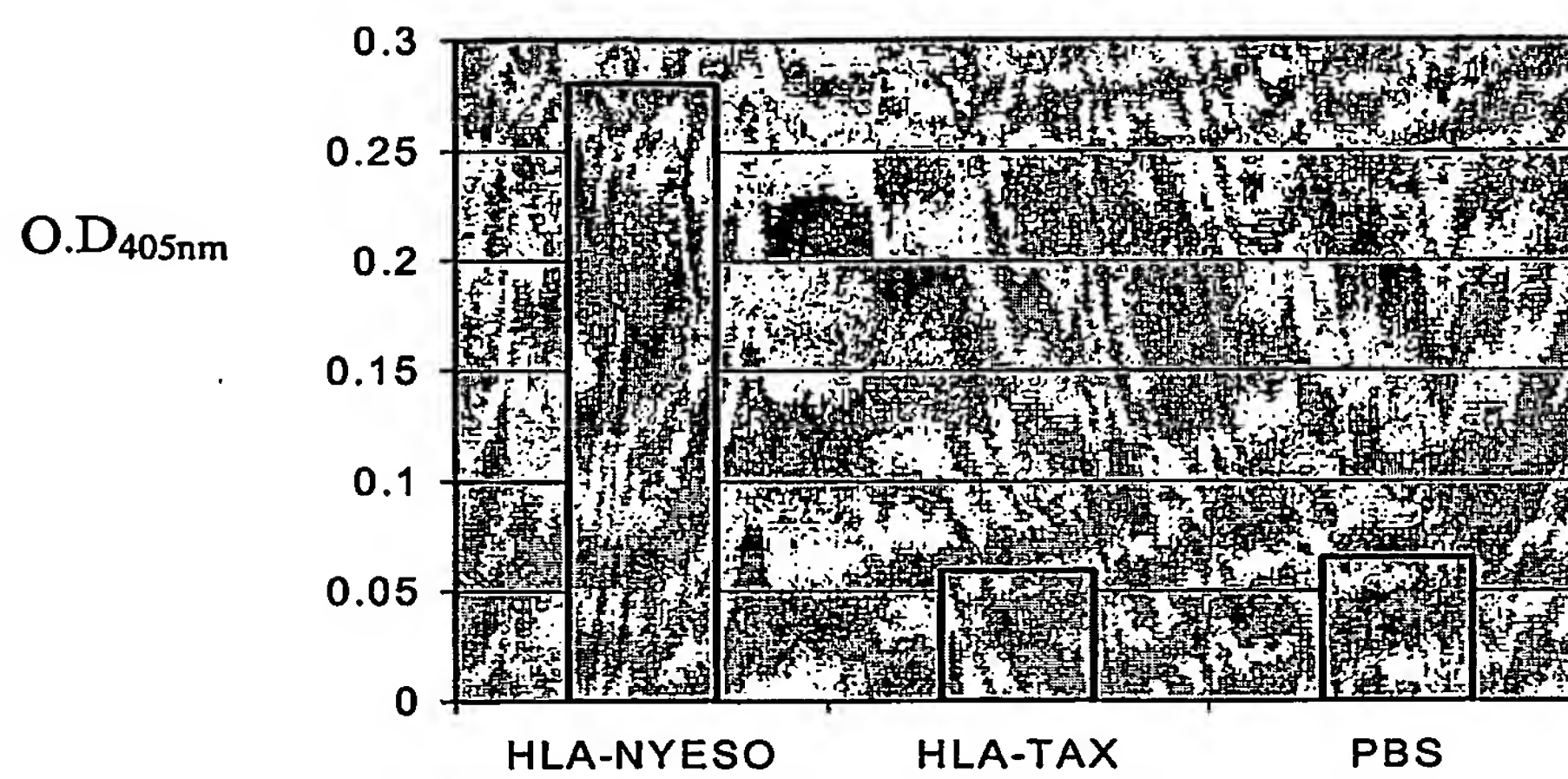


Figure 21

DRA0101

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841 catgagtagg atcc

(SEQ ID 168)



xxx

- Fos Leucine zipper codons
- Biotinylation tag codons

Figure 22

```

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(SEQ ID 169)



- Restriction enzyme sites

Figure 23

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(SEQ ID 170)



- Jun Leucine zipper codons
- HLA-loaded peptide

Figure 24

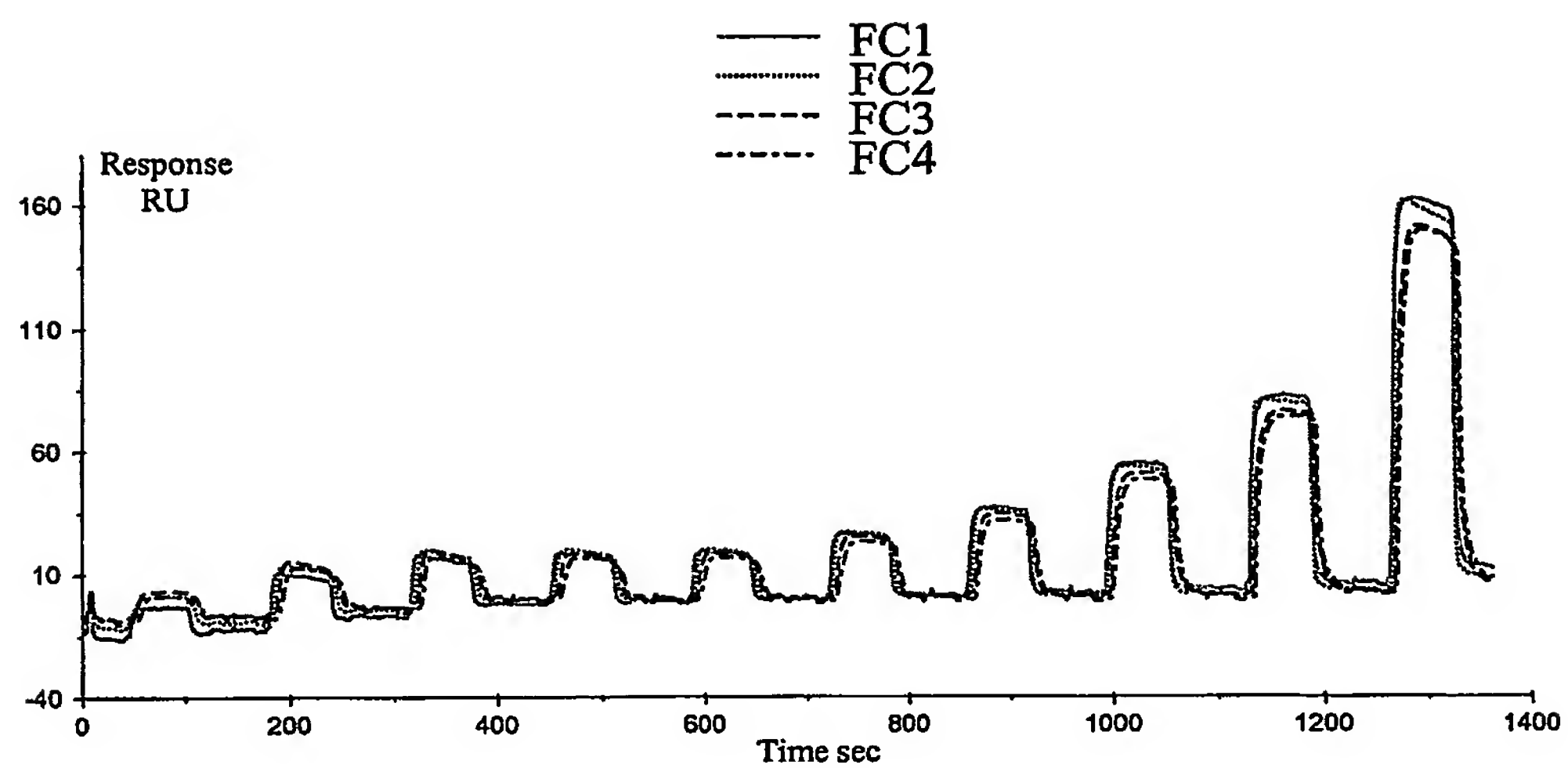


Figure 25

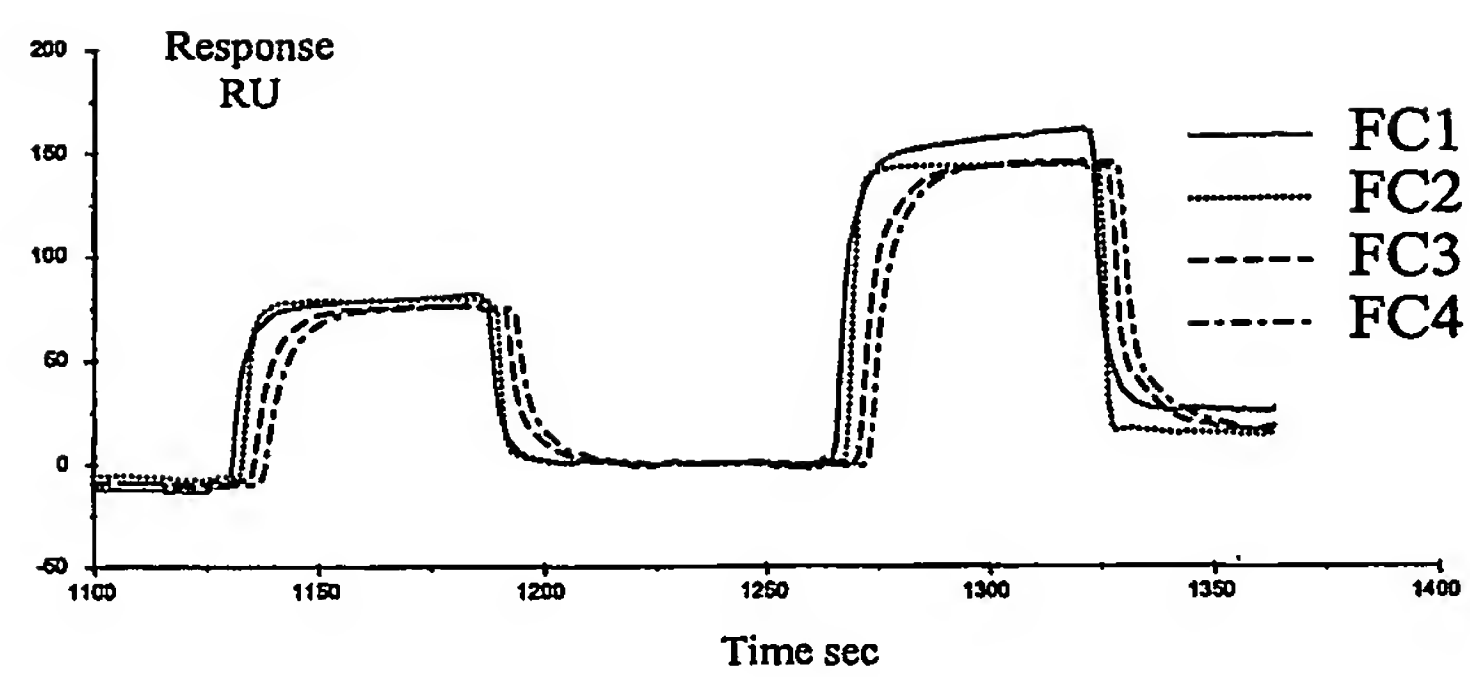


Figure 26

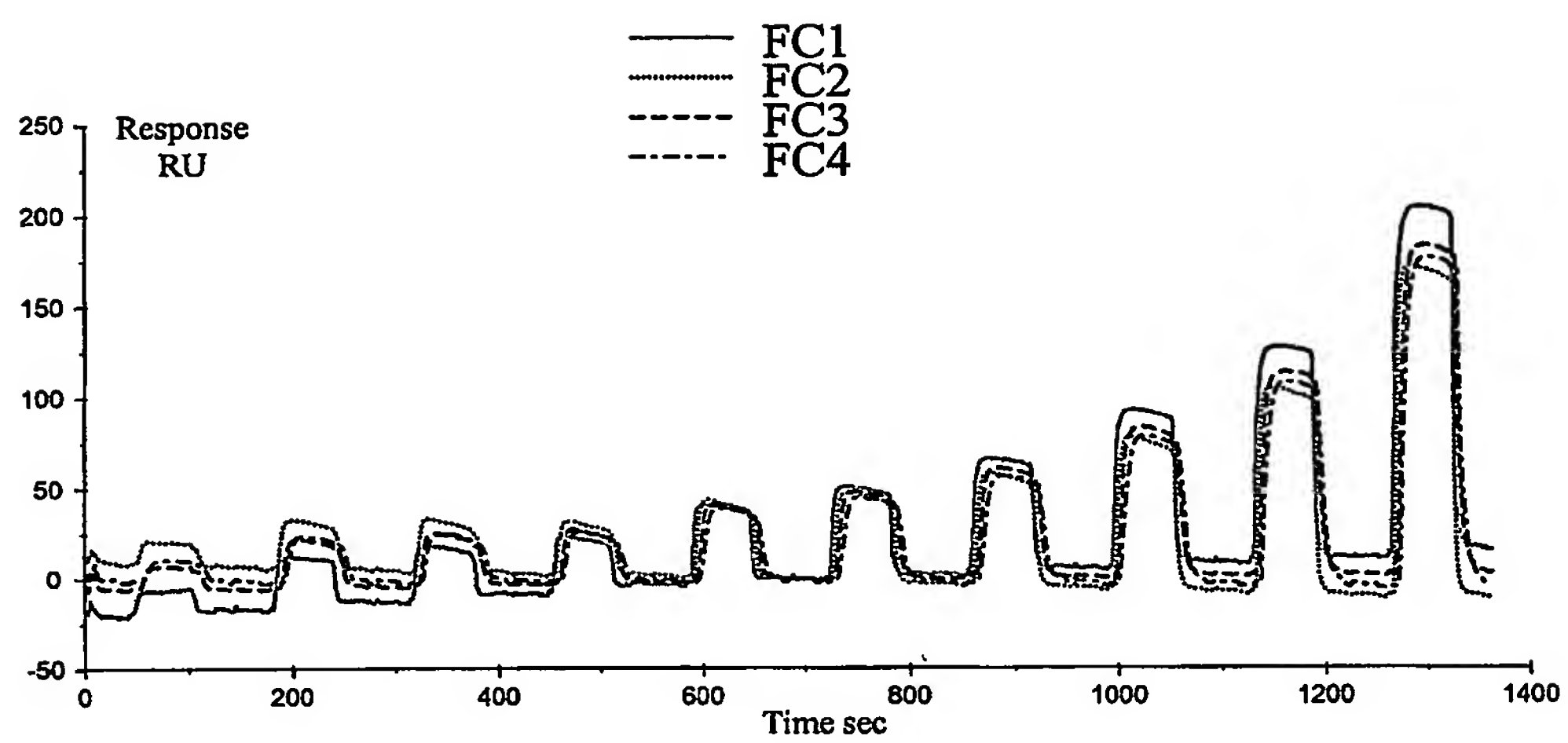


Figure 27

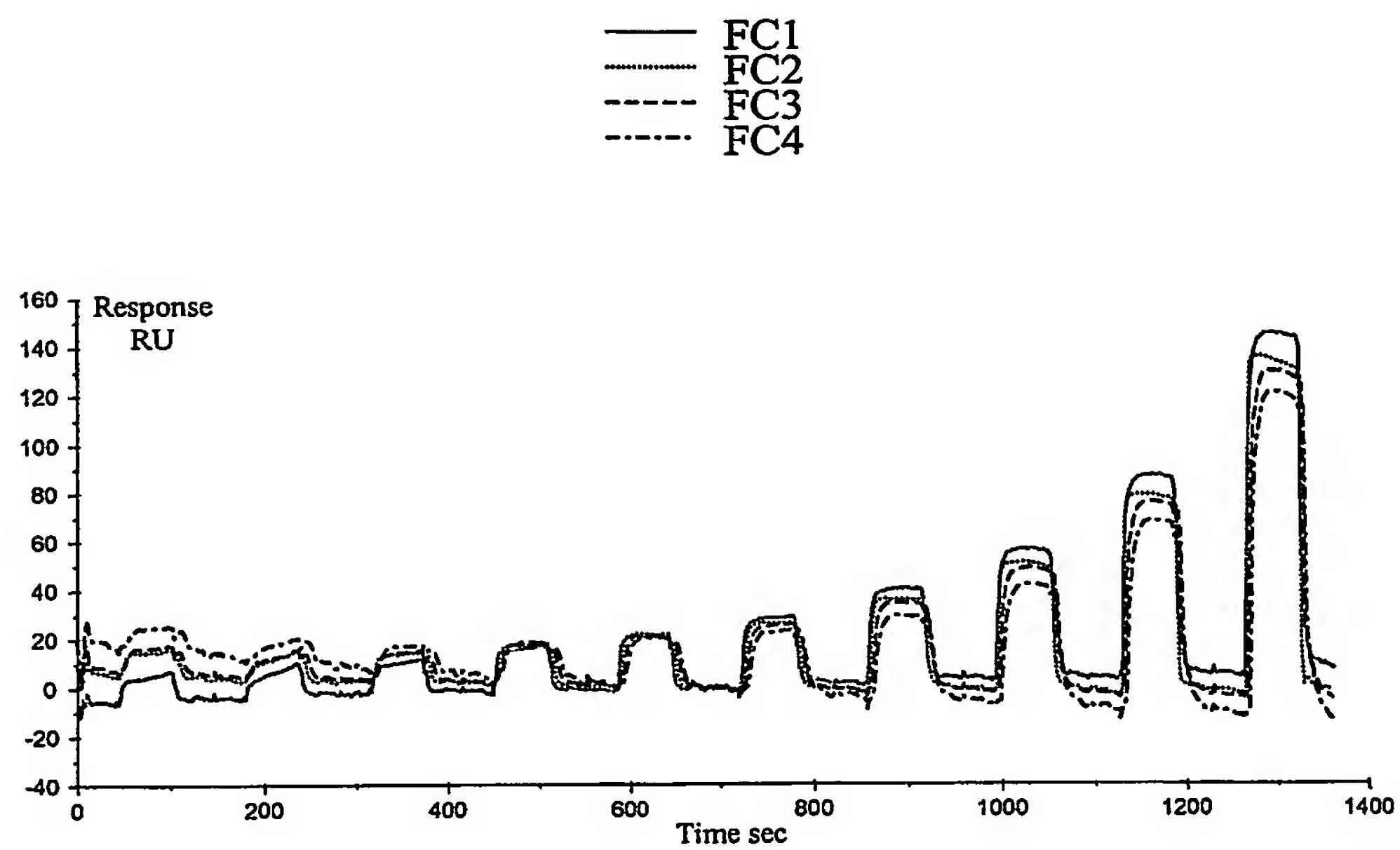


Figure 28

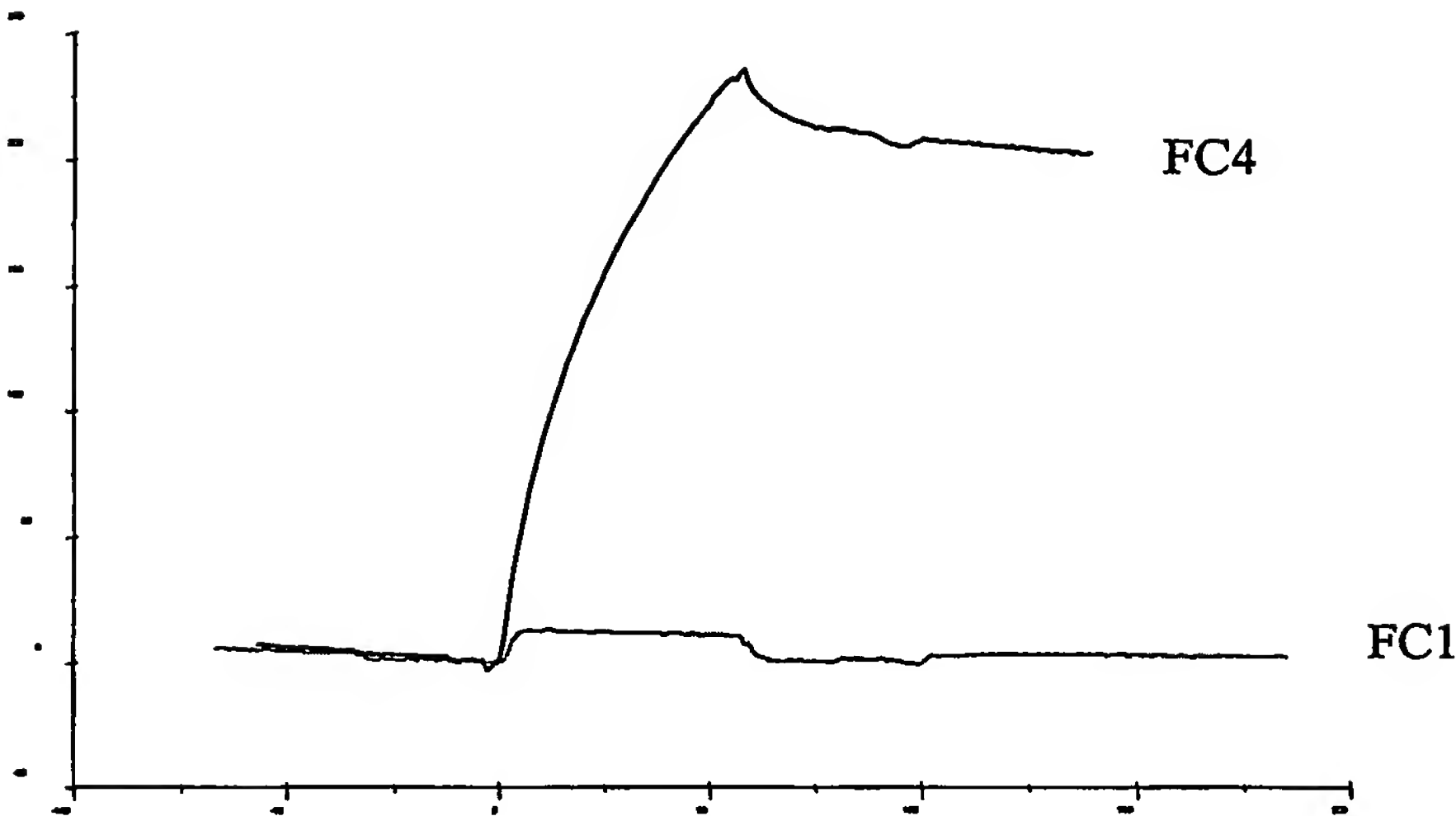


Figure 29a

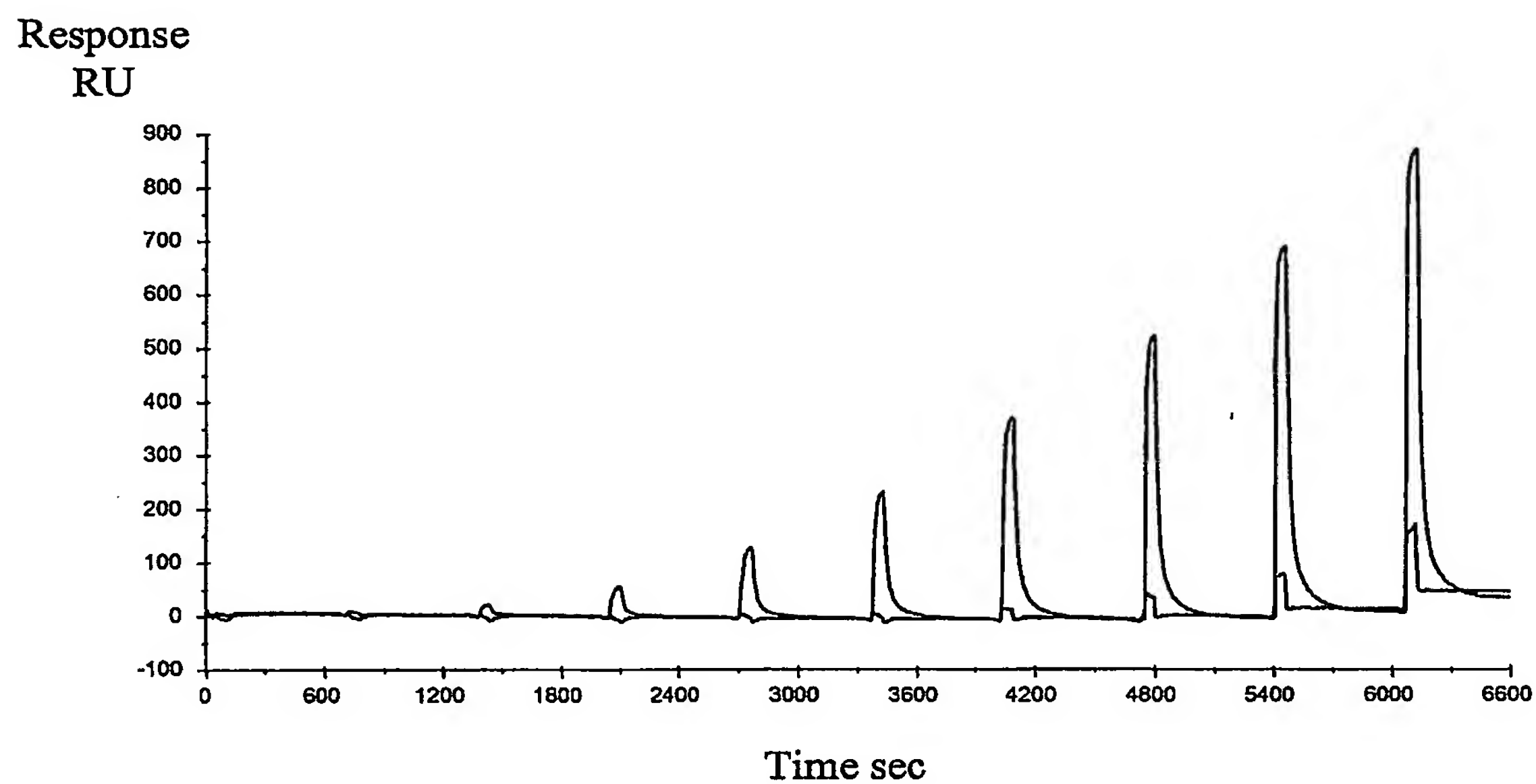


Figure 29b

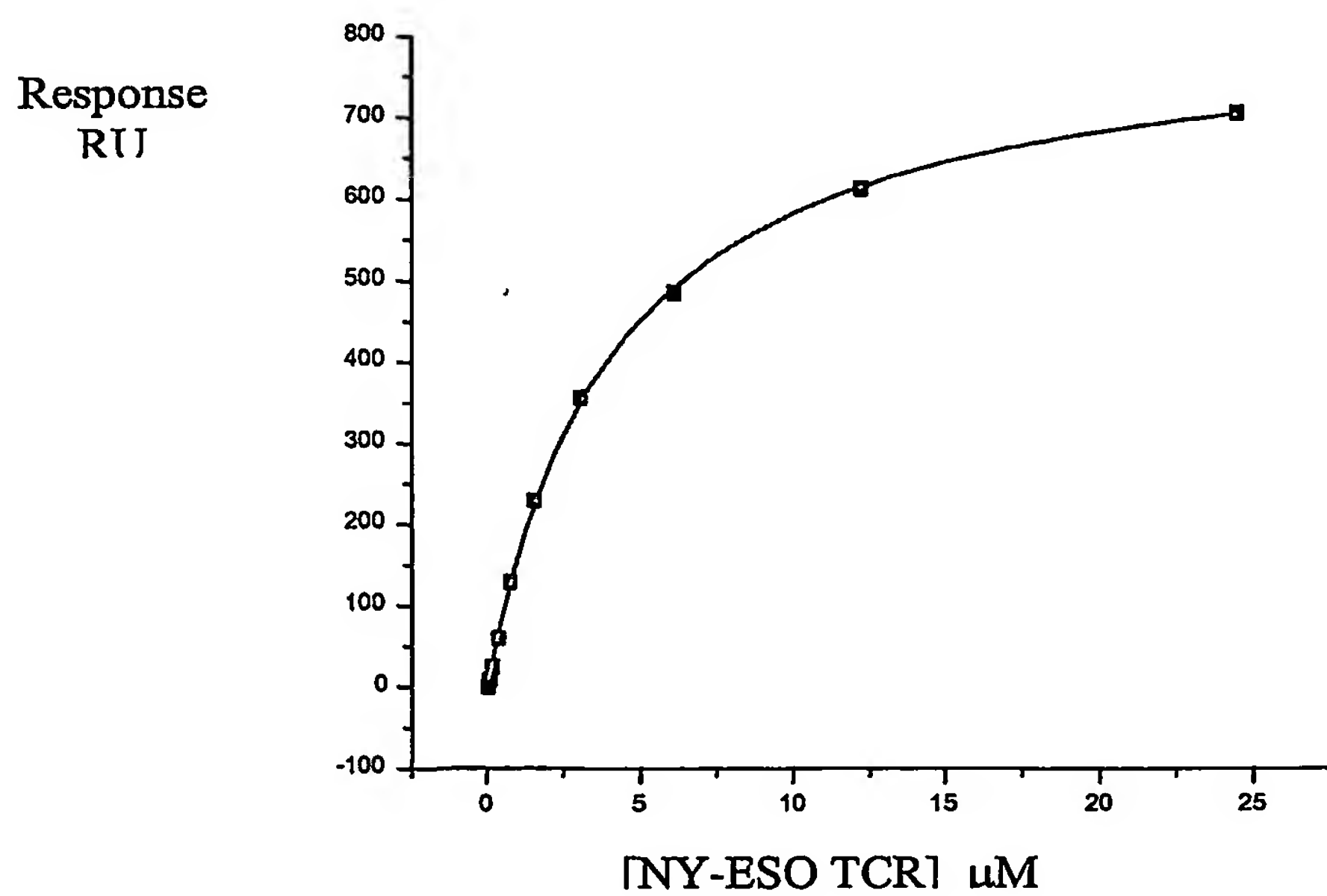


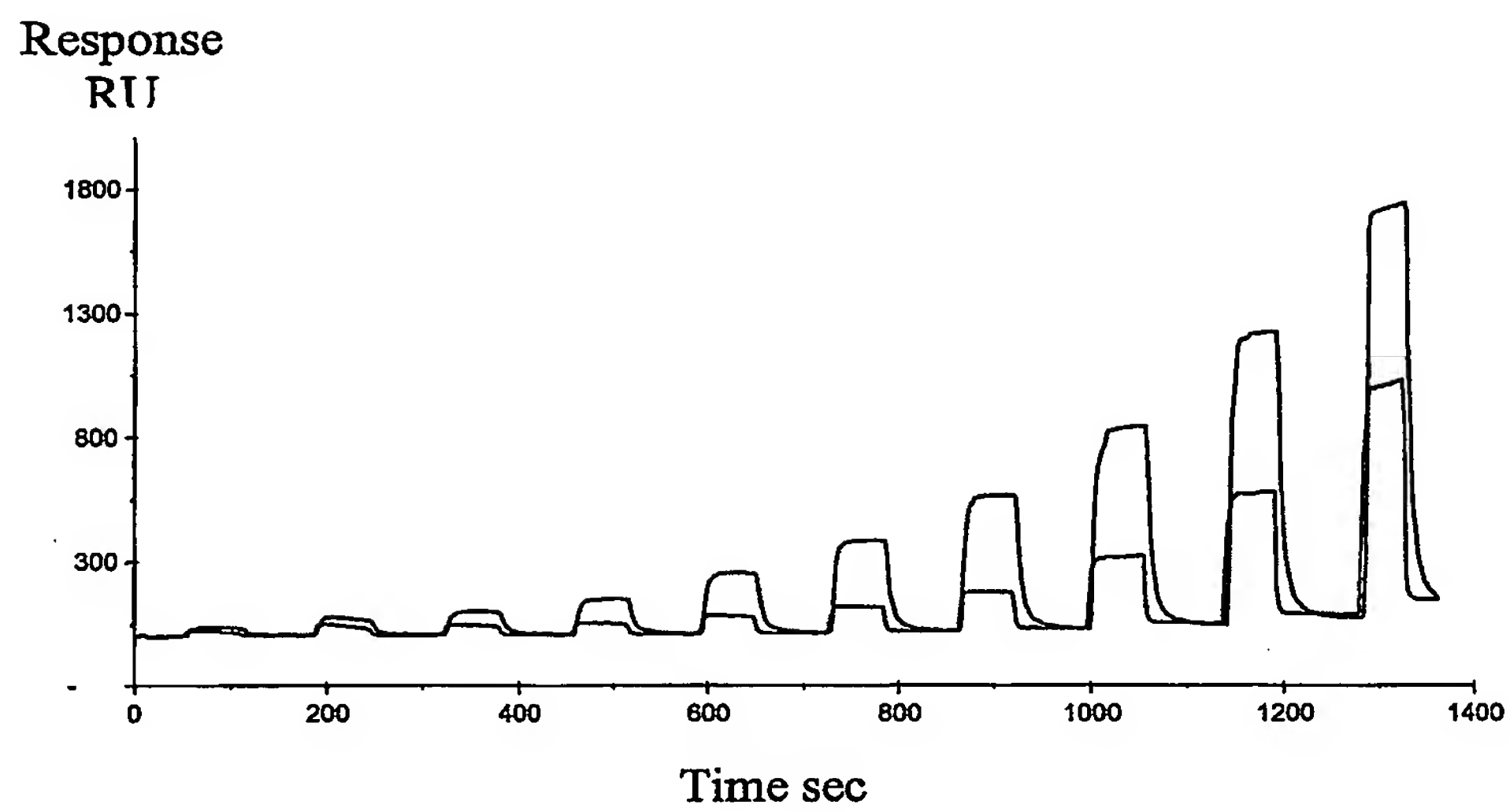
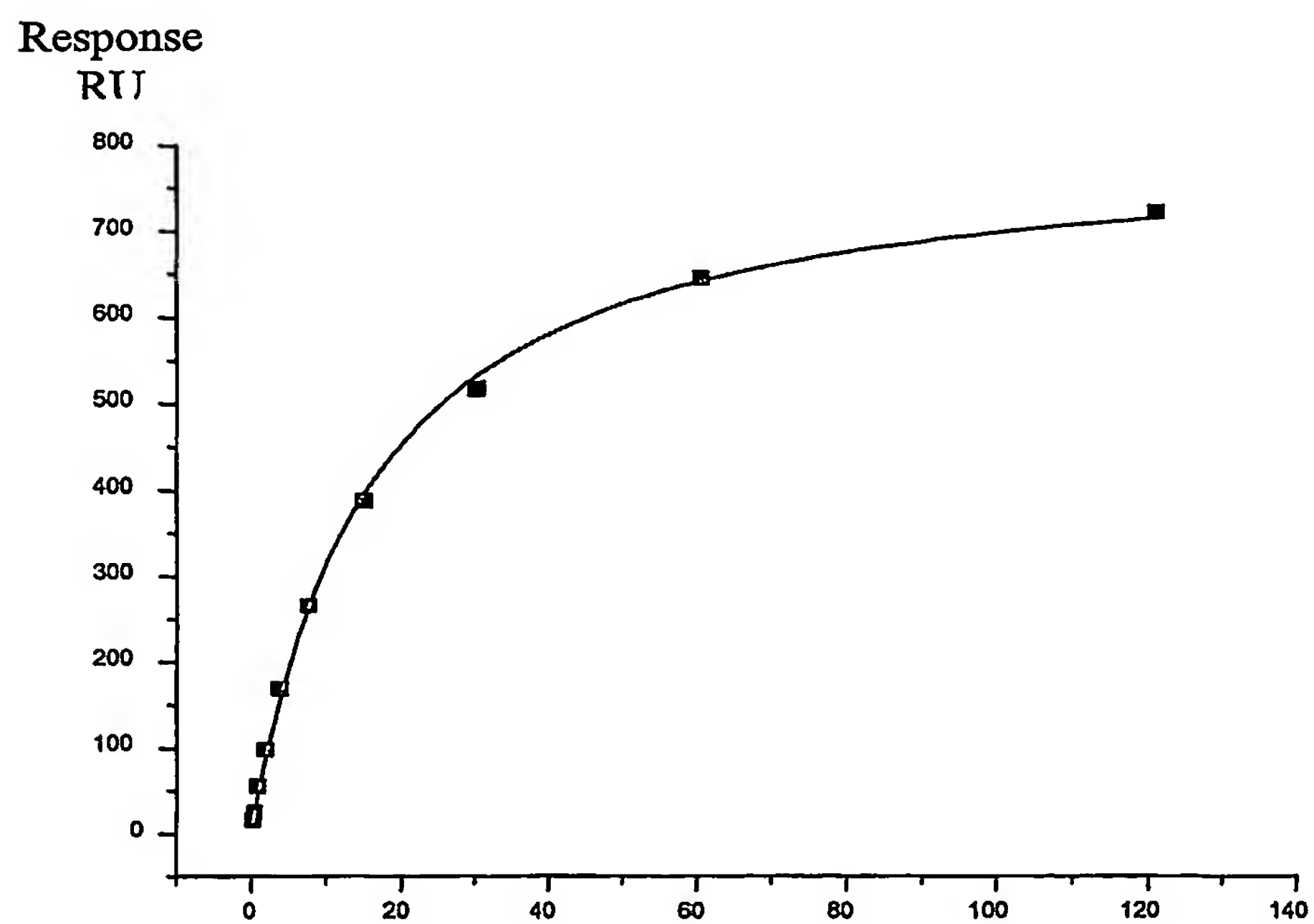
Figure 30a**Figure 30b**

Figure 31a

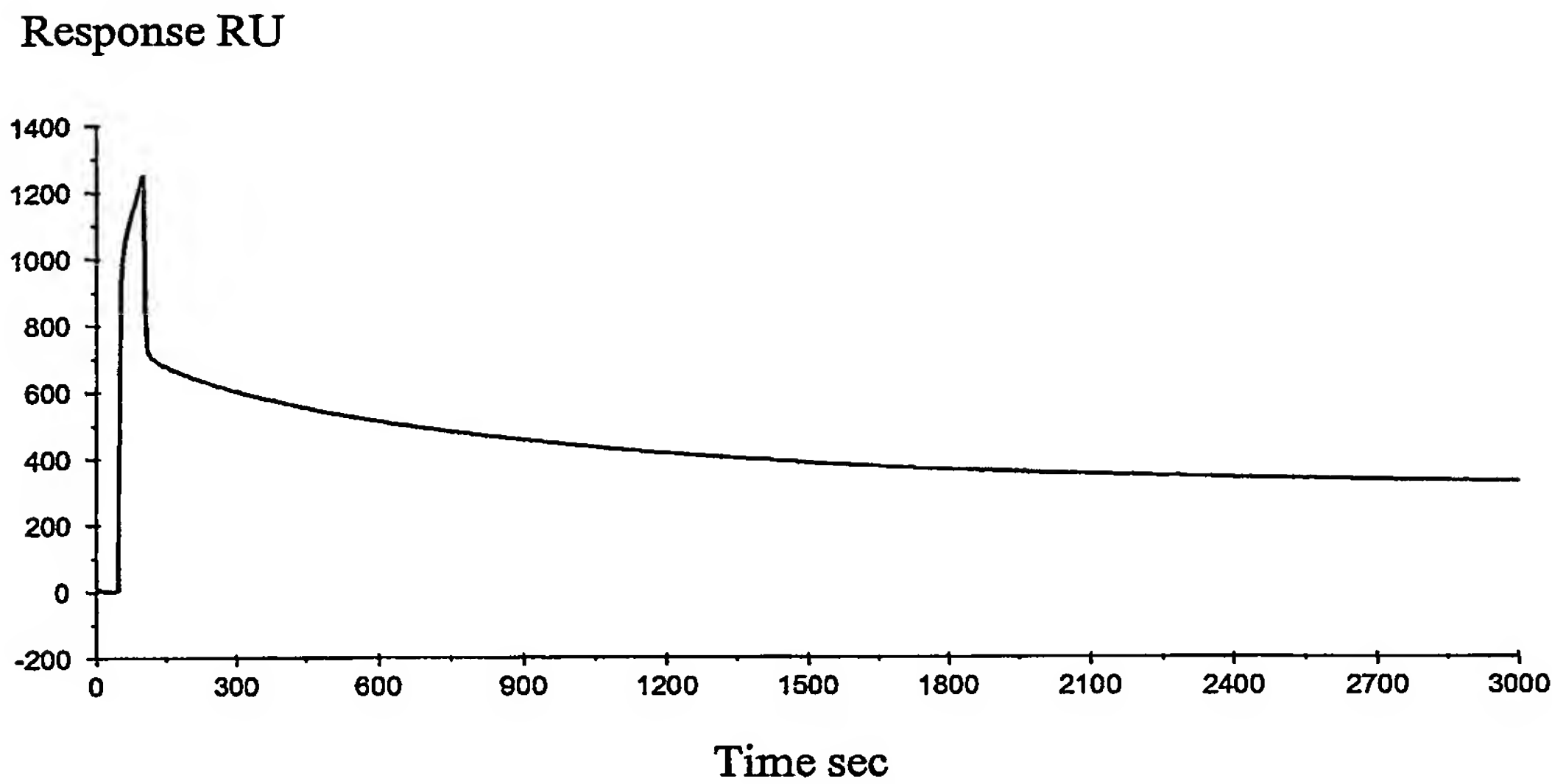


Figure 31b

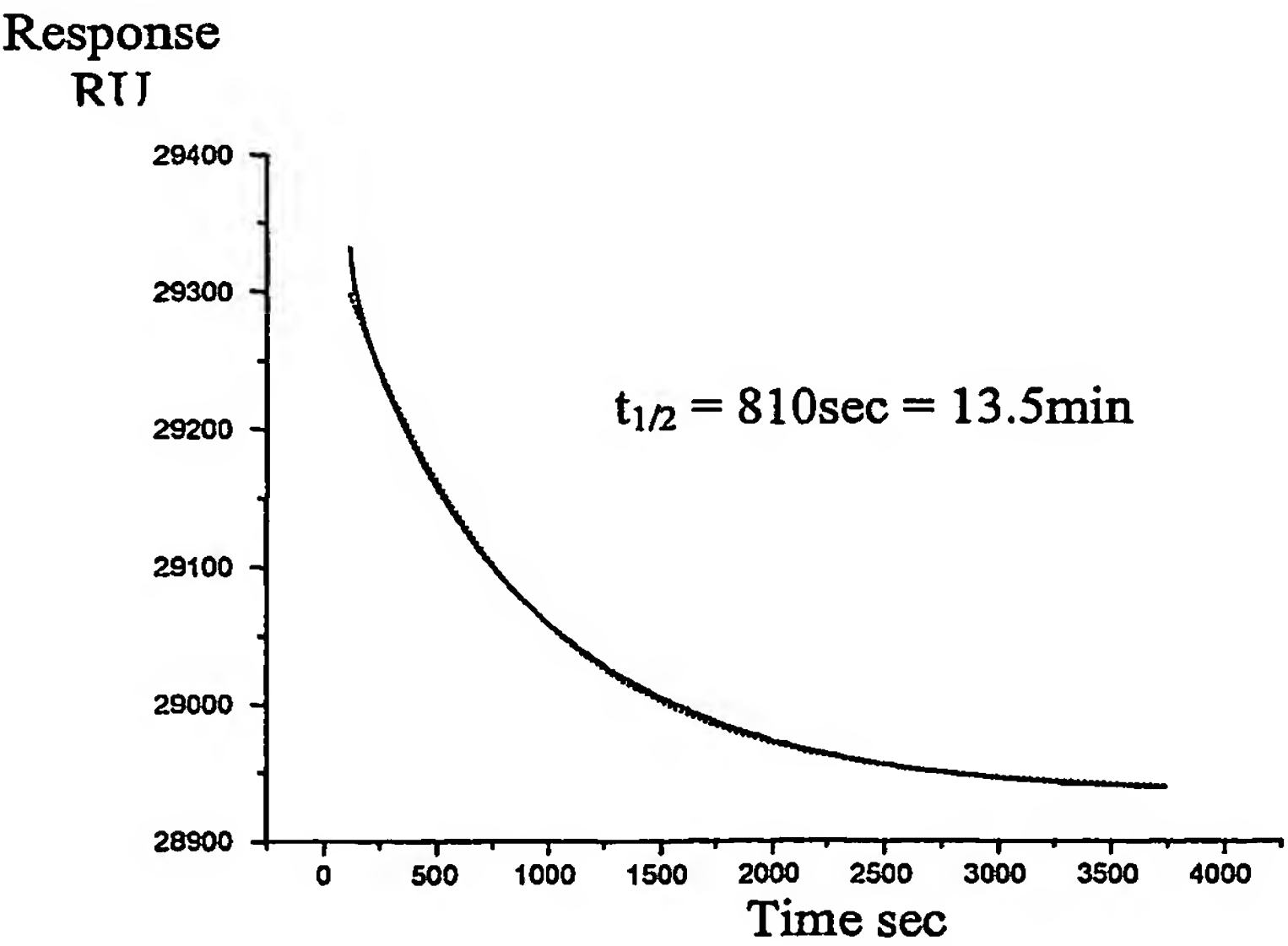


Figure 32a

Response RU

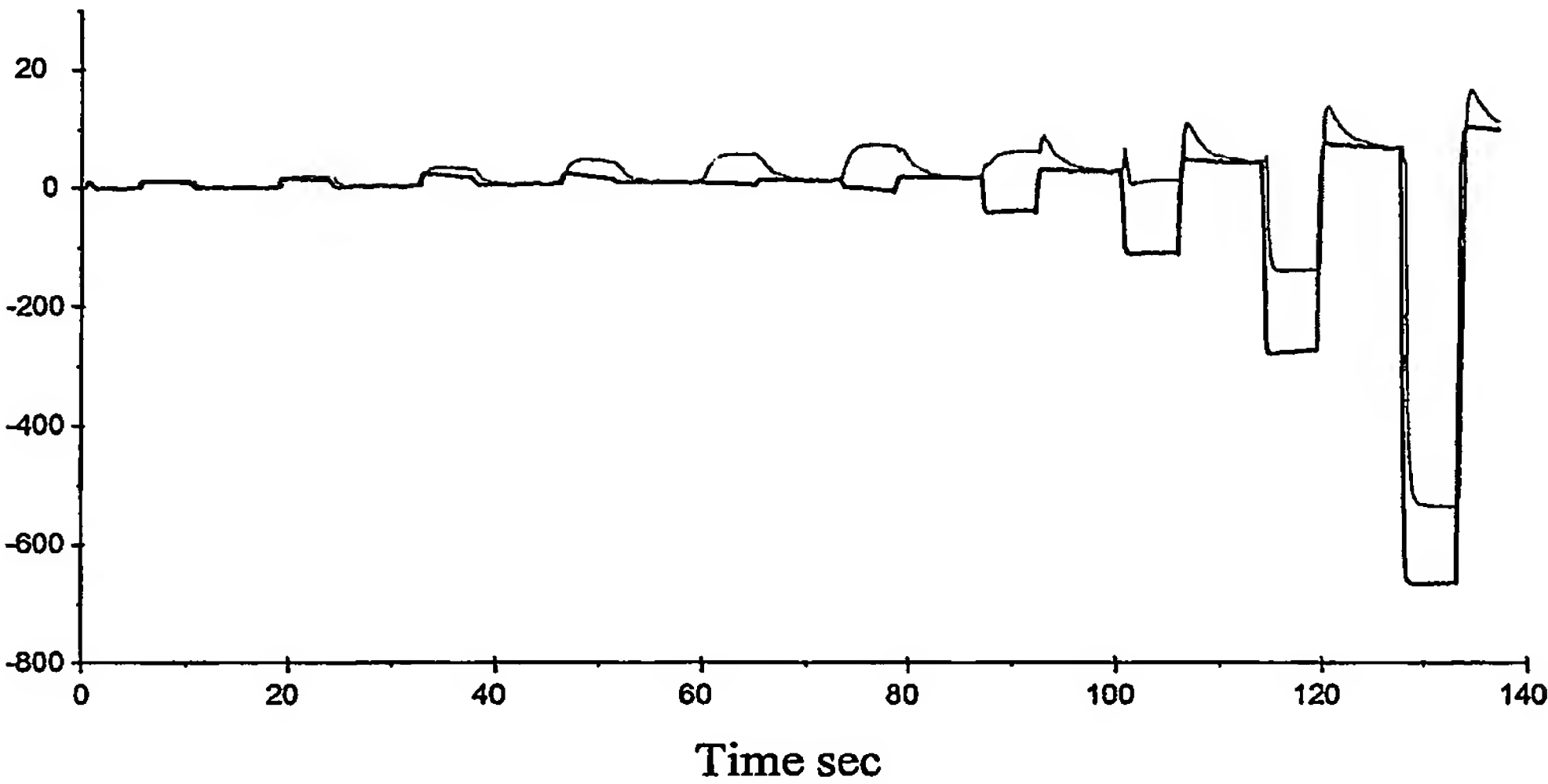


Figure 32b

Response
RU

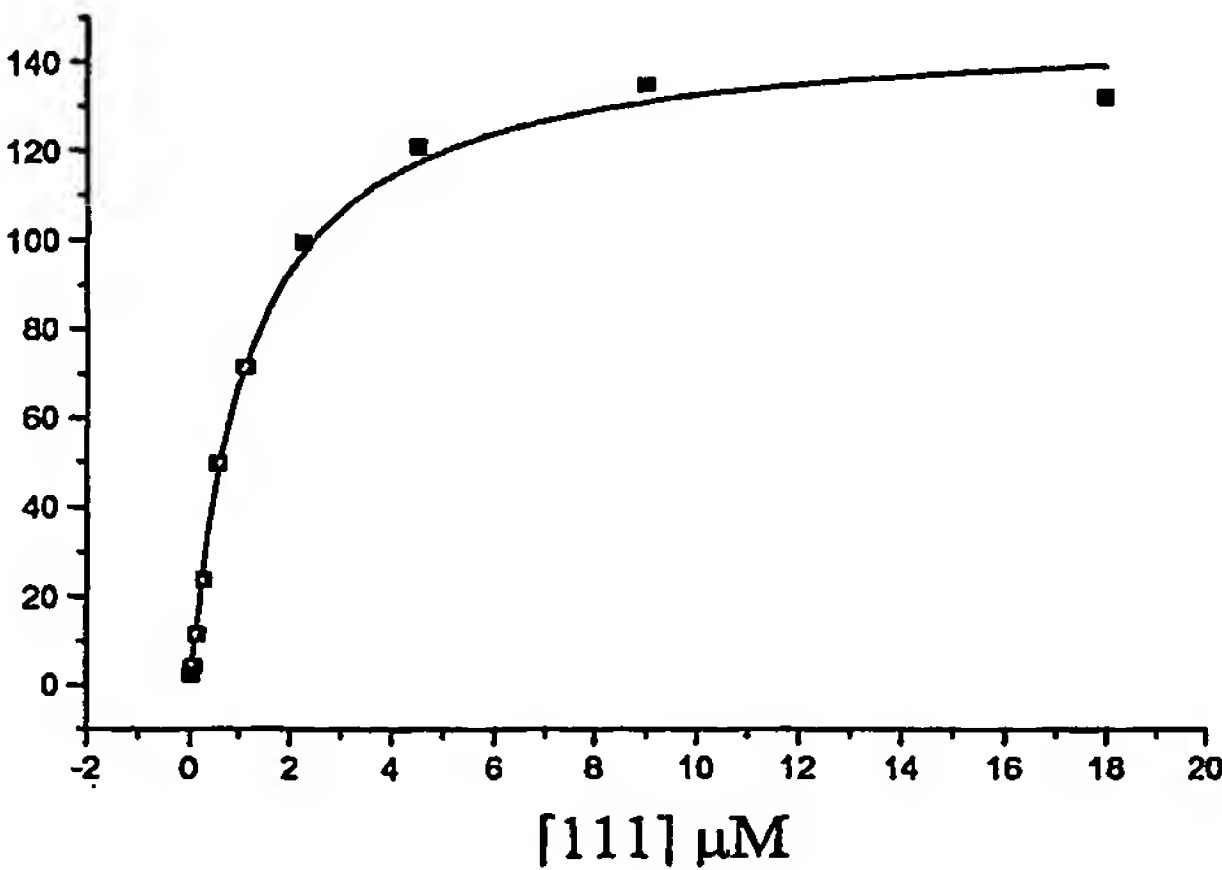


Figure 33a

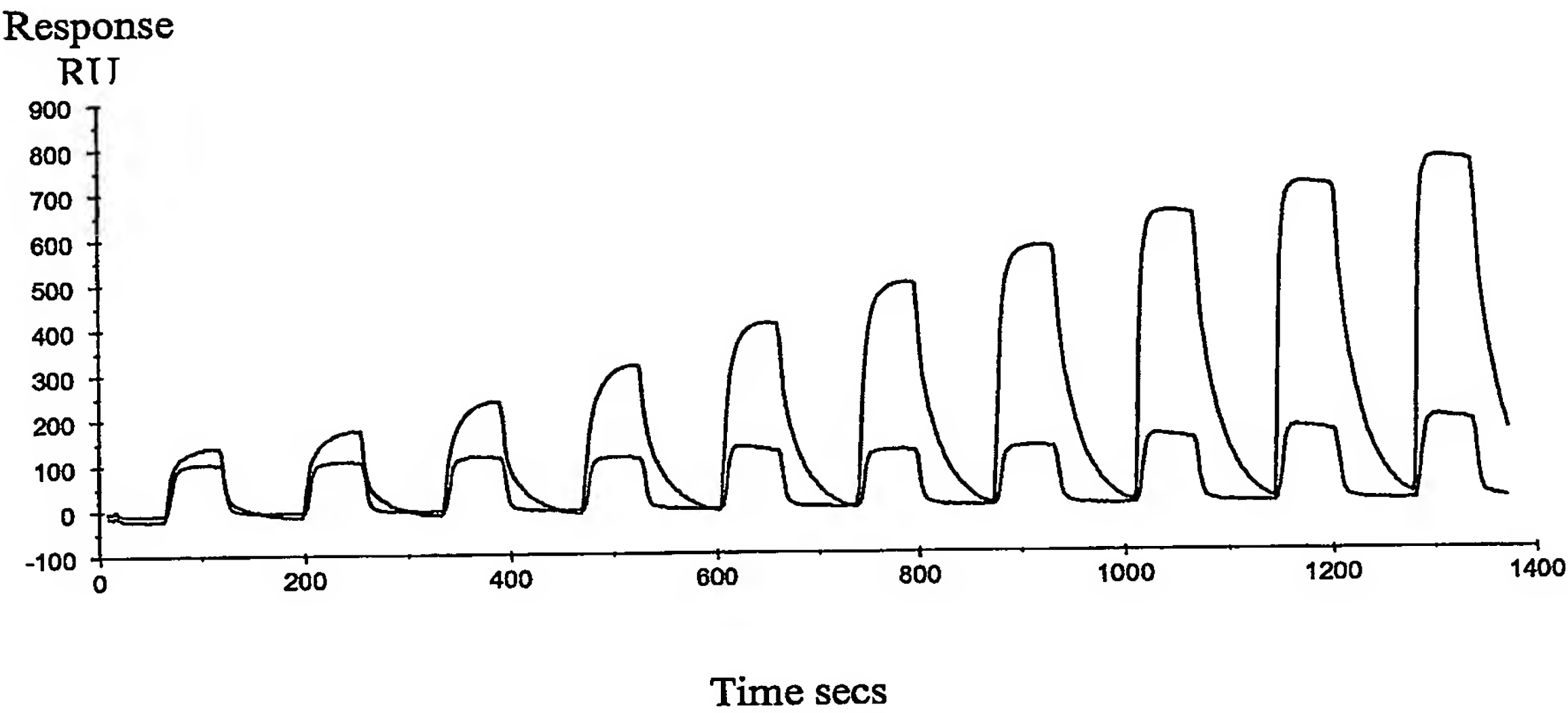


Figure 33b

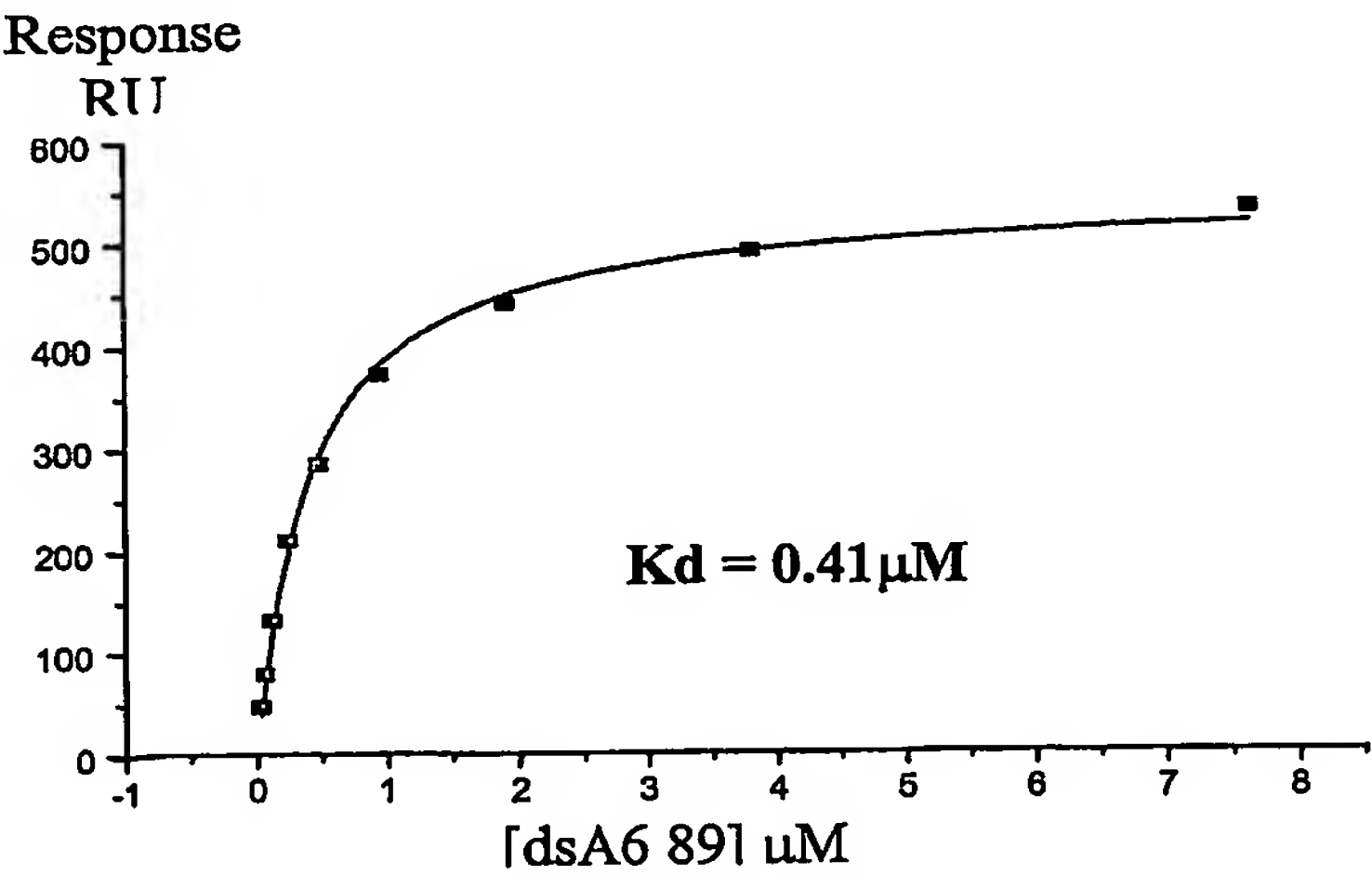


Figure 34

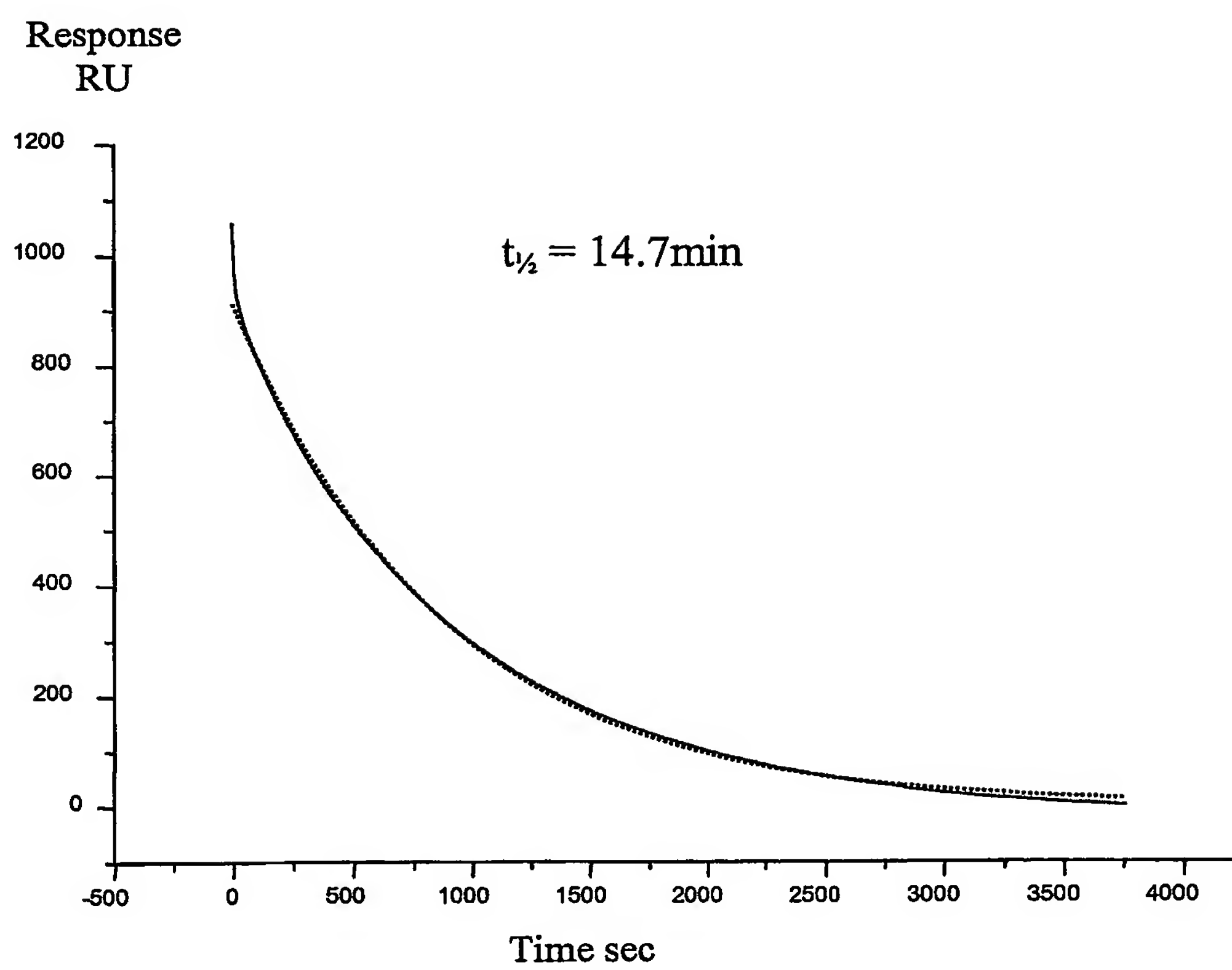


Figure 35

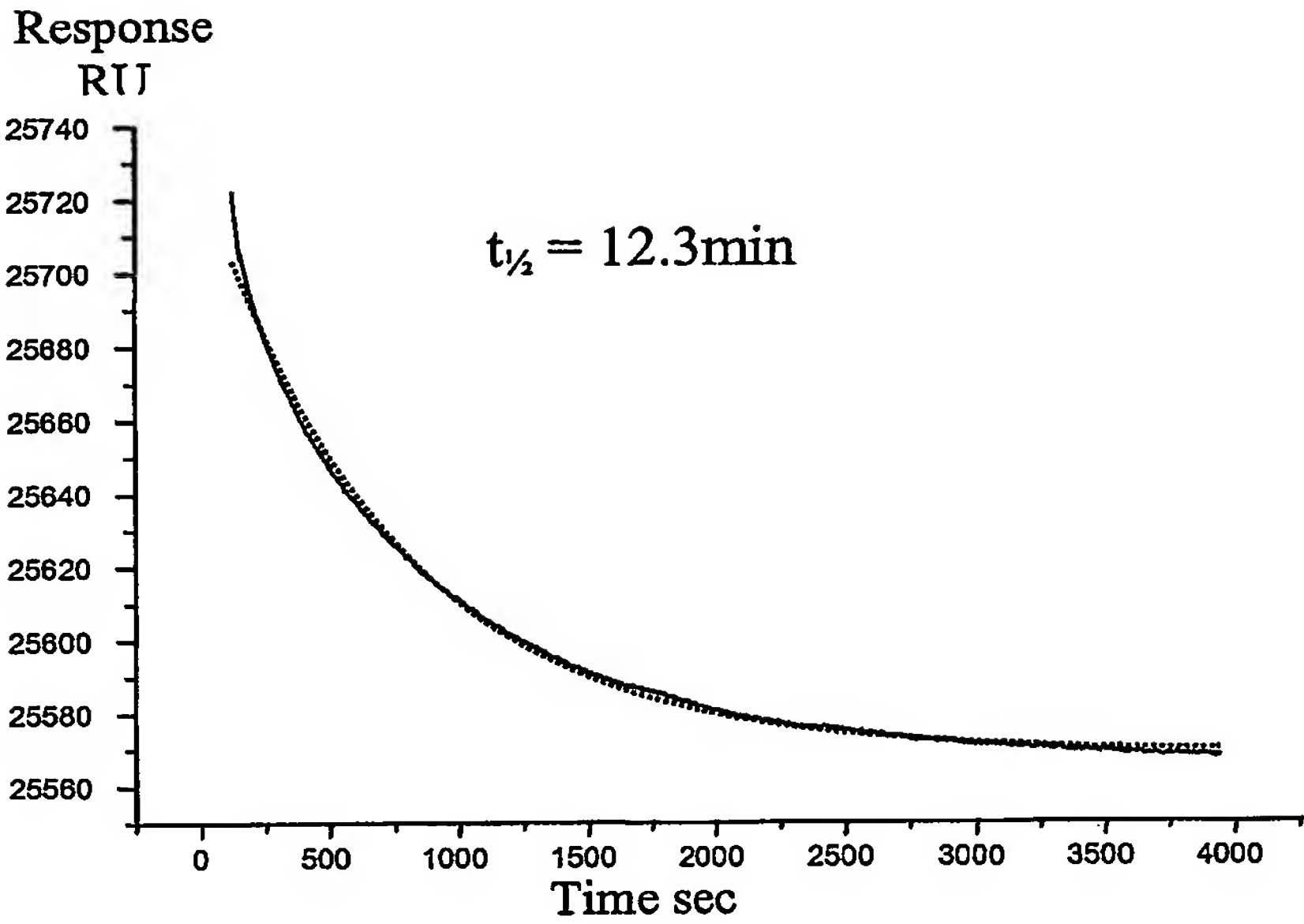


Figure 36

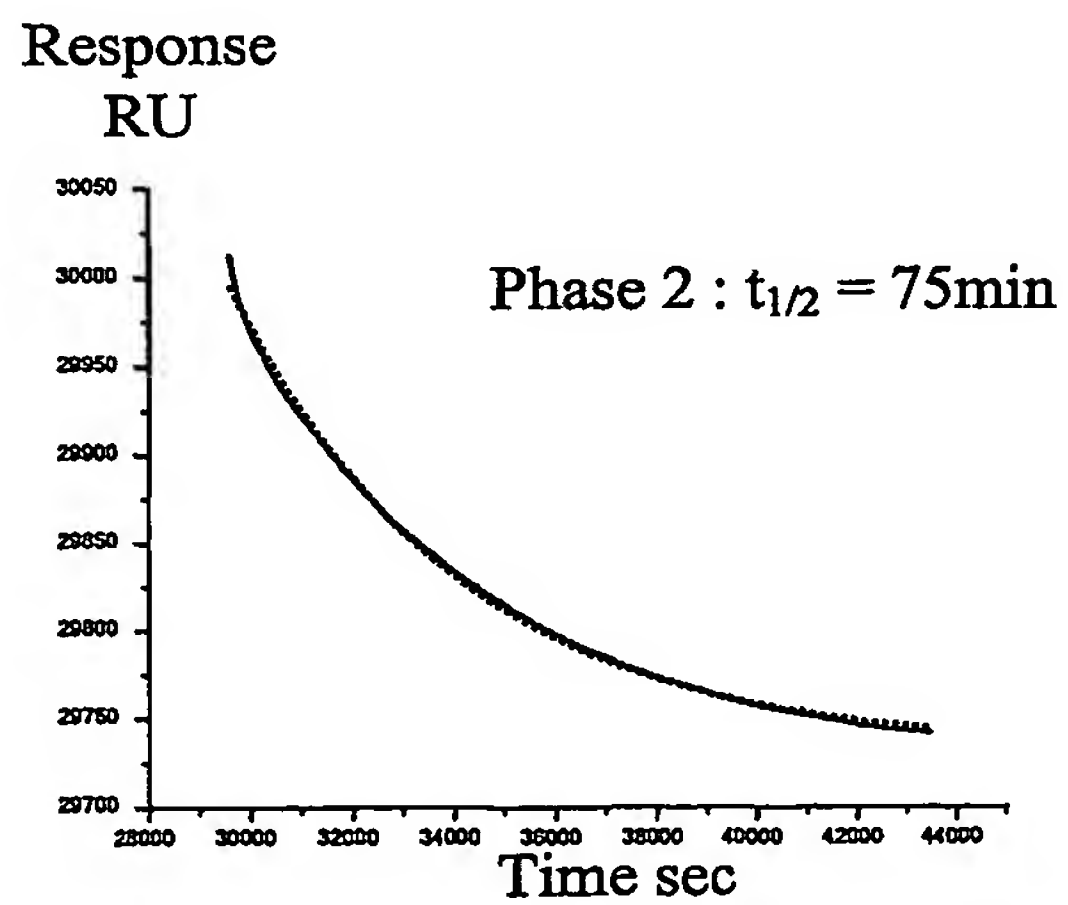
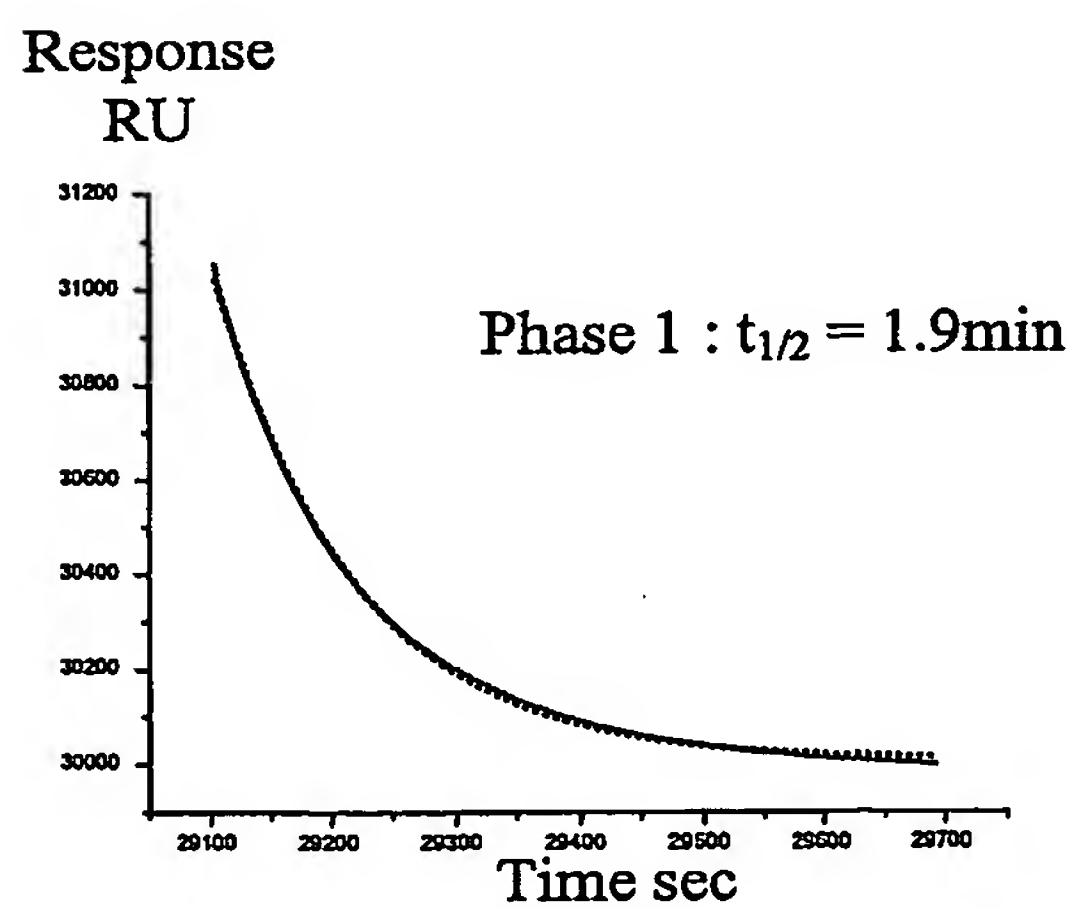
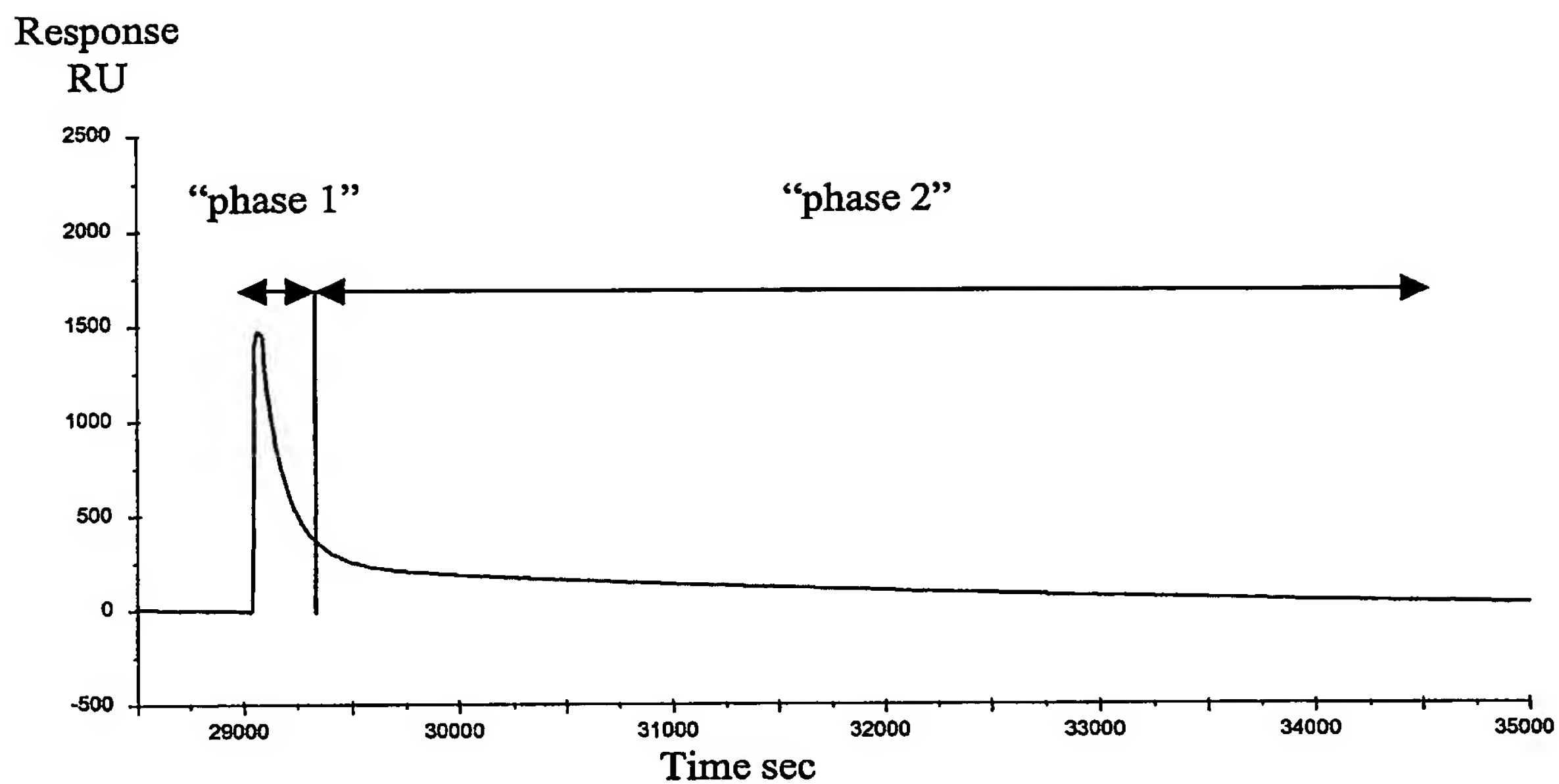


Figure 37a

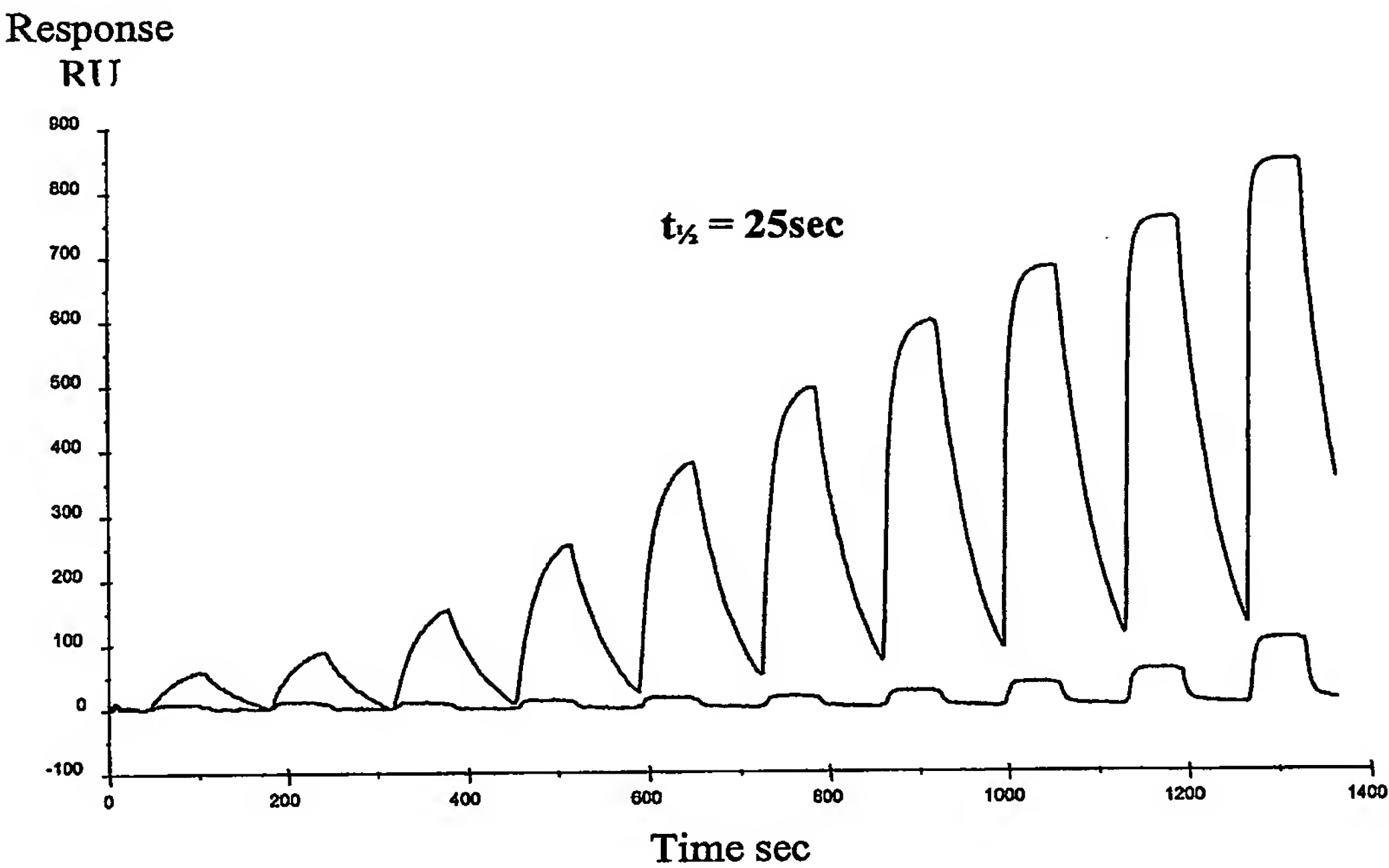


Figure 37b

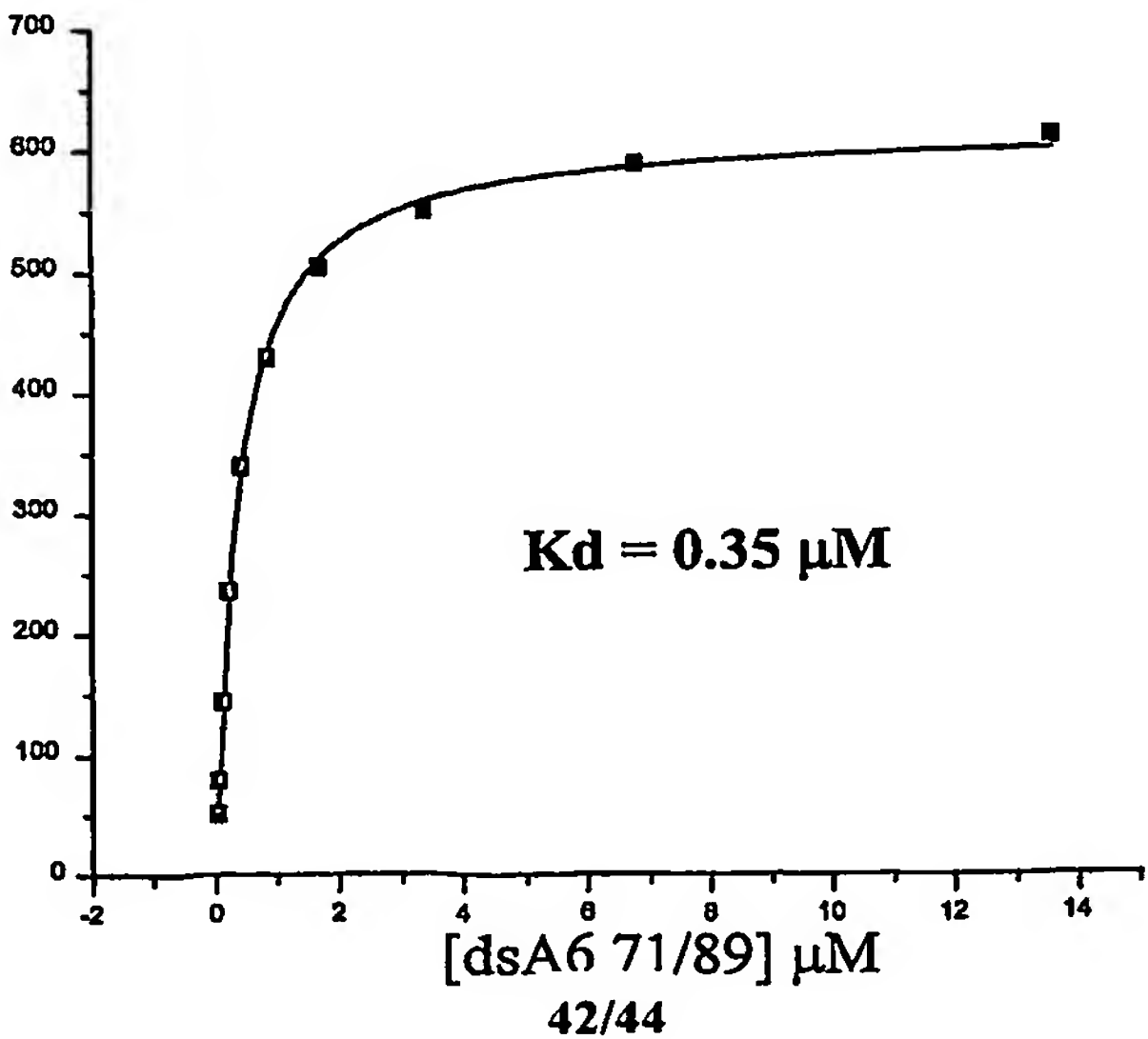


Figure 38a

MNAGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG
MGLRLIHYSV GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSQTSVYF
CASRPGLAGG RPEQYFGPGT RLTVT (SEQ ID 171)

Figure 38b

MNAGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG
MGLRLIHYSV GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSQTSVYF
CASRPGLMSAXPEQYFGPGT RLTVT (SEQ ID 172)

X denotes a position at which amino acids E, Q or R can be inserted.

Figure 38c

MNAGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG
MGLRLIHYSV GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSQTSVYF
CASRPGLAGG RPEDQYFGPGT RLTVT (SEQ ID 173)

Figure 38d

MNAGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG
MGLRLIHYSV GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSQTSVYF
CASRPGLVPG RPEQQFGPGT RLTVT (SEQ ID 174)

Figure 38e

MNAGVTQTPKF QVLKTGQSMT LQCAQDMNHE YMSWYRQDPG
MGLRLIHYSV GAGITDQGEV PNGYNVSRST TEDFPLRLLS AAPSQTSVYF
CASRPGLAGG RPHPQFGPGT RLTVT (SEQ ID 175)

Figure 39a

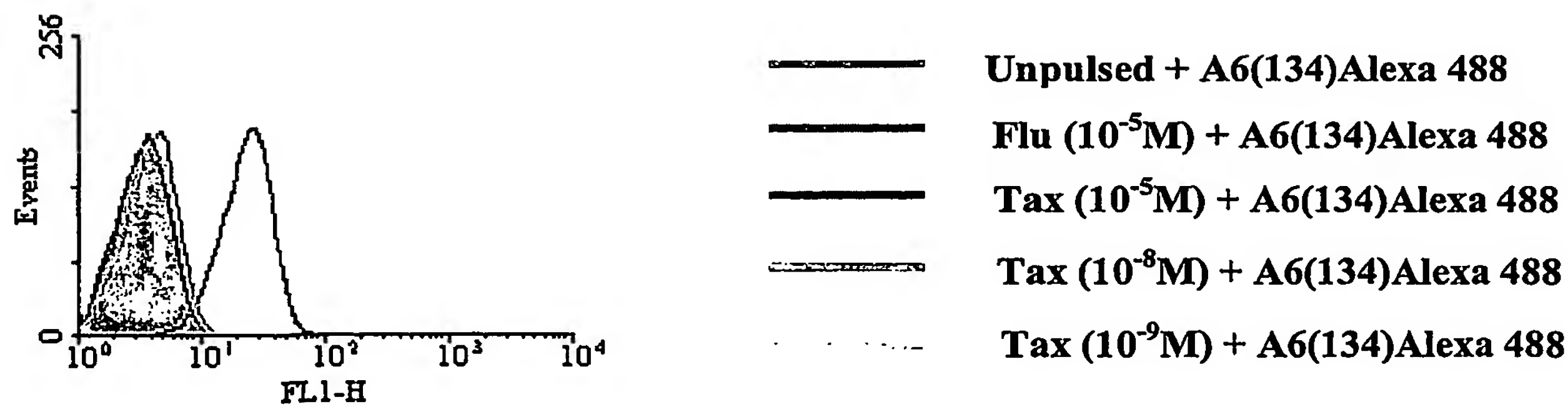
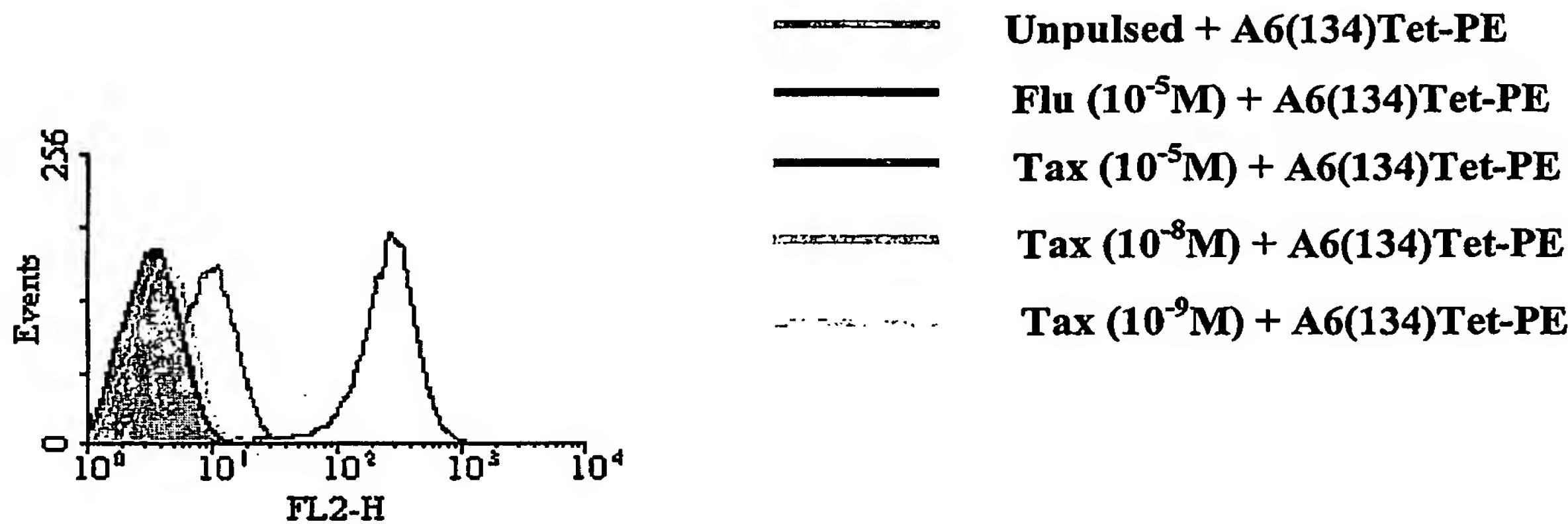


Figure 39b